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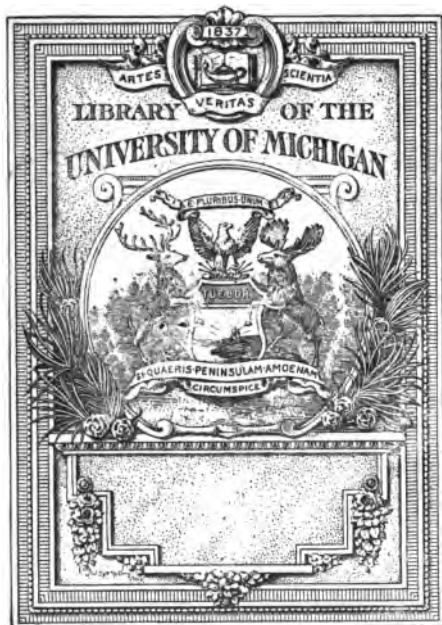
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TRANSACTIONS
OF THE
MINNESOTA
STATE HORTICULTURAL SOCIETY,

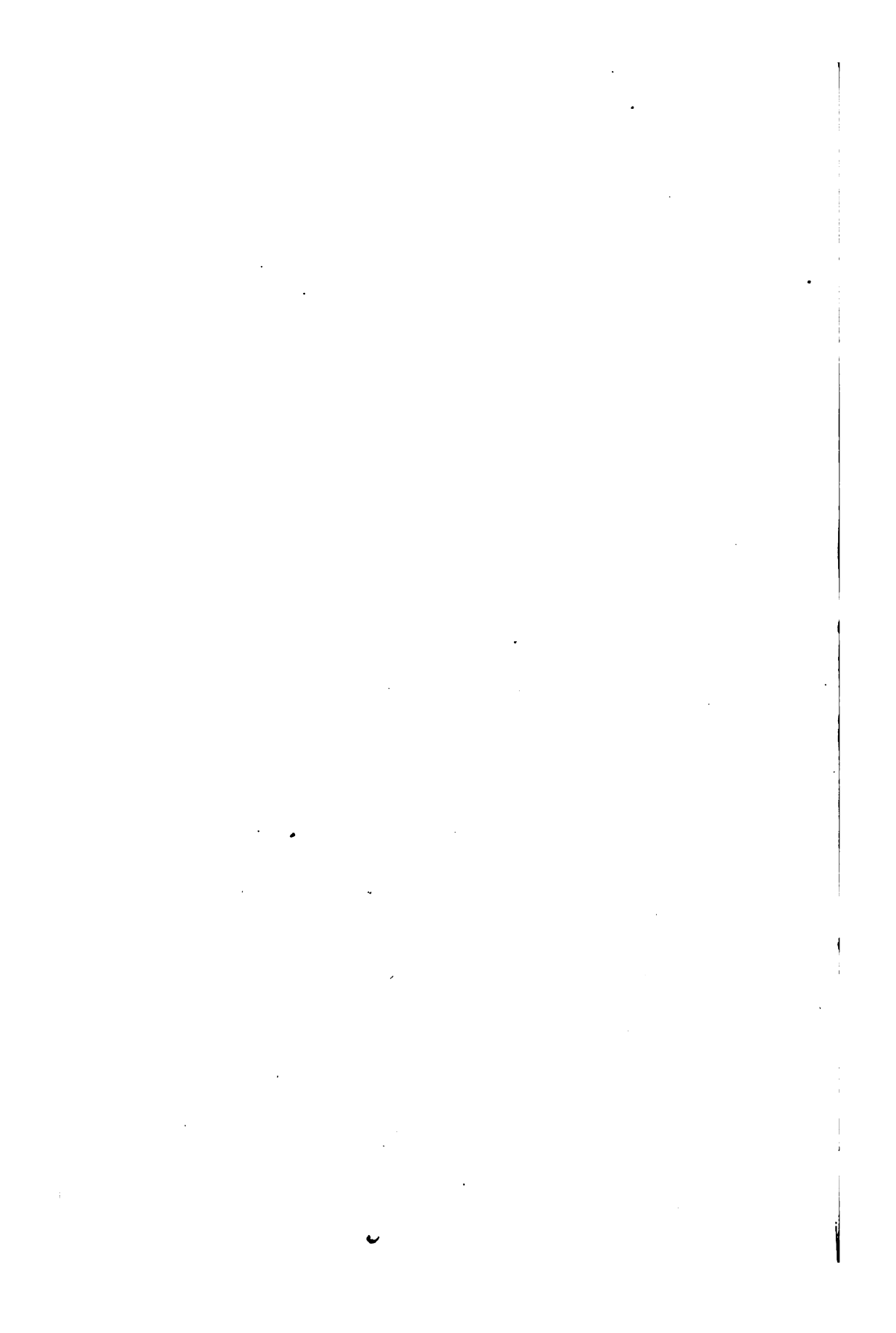
PROCEEDINGS, ESSAYS, AND REPORTS

AT THE
ANNUAL WINTER MEETING,

HELD AT
Rochester, January 15th, 16th and 17th, 1878.

PREPARED BY CHAS. Y. LACY, SECRETARY.

MINNEAPOLIS:
JOHNSON, SMITH & HARRISON.
1878,



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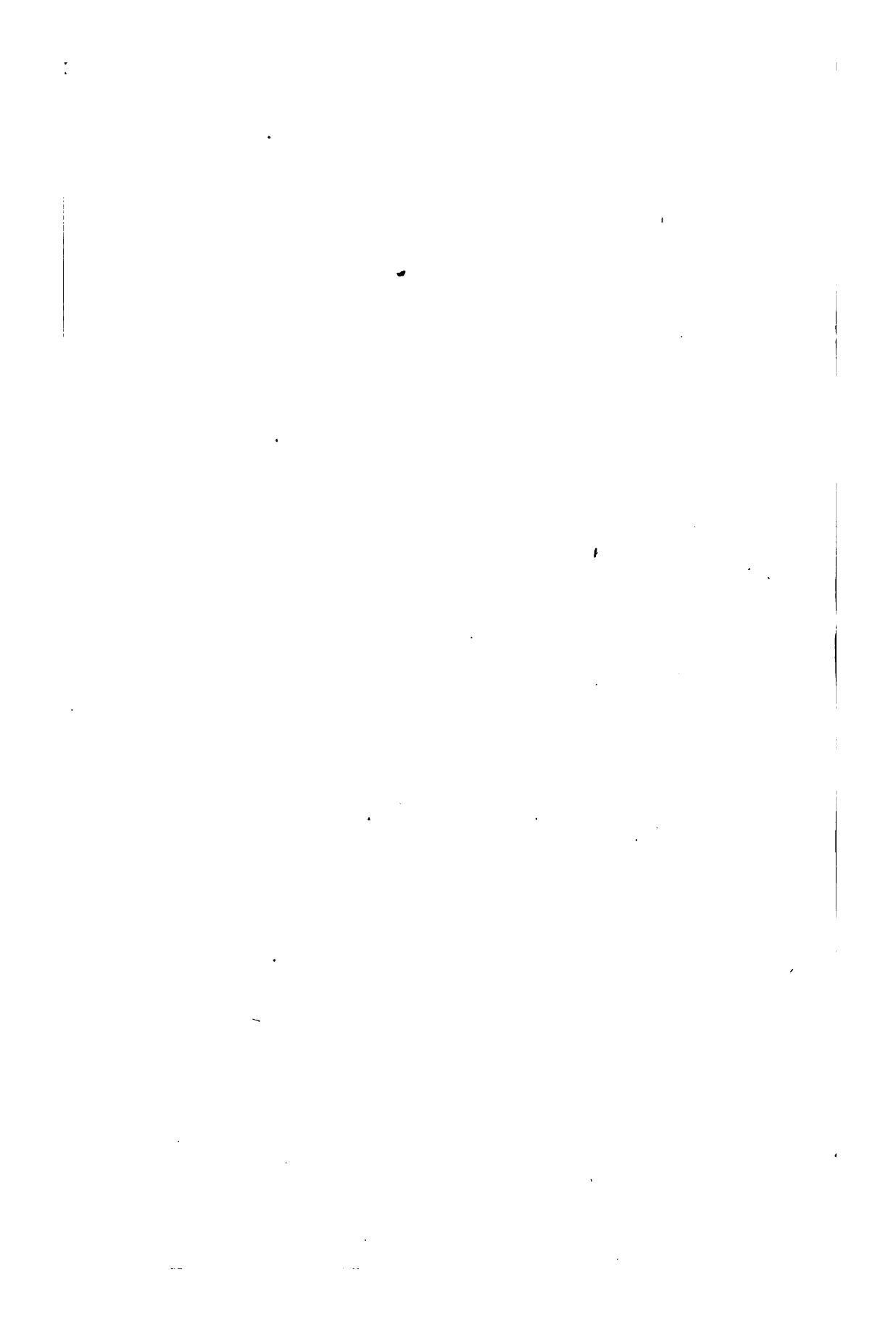
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DITUS DAY, Second District.....Farmington.

U. S. HOLLISTER, Third District.....St. Paul.

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A. W. SIAS.....Rochester.

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A. Miller, St. Paul.....Secretary.

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A. W. McKinstry, Faribault.....Secretary

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Ernest Meyer, St. Peter.....President.
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M'LEOD COUNTY HORTICULTURAL SOCIETY.

James Chesley, Hutchinson.....President.
Wm. H. Pendergast, Hutchinson.....Secretary.

OLMSTED COUNTY HORTICULTURAL SOCIETY.

A. W. Sias, Rochester.....President.
S. D. Hillman, Rochester.....Secretary.

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Brand, O. F.....	Faribault, Rice county.
Brainard, H. J.....	St. Paul, Ramsey county.
Brimhall, Wm. E.....	St. Paul, Ramsey county.
Cannon, Wm.....	Fort A. Lincoln, D. T.
Carter, T. G.....	St. Peter, Nicollet county.
Clark, Geo. W.....	Winona, Winona county.
Cook, Martin W.....	Rochester, Olmsted county.
Cotterell, R. L.....	Dover, Olmsted county.
Dart, E. H. S.....	Owatonna, Steele county.
Day, Ditus.....	Farmington, Dakota county.
Day, L. E.....	Farmington, Dakota county.
Day, A. A.....	Farmington, Dakota county.
Elliot, Wyman.....	Minneapolis, Hennepin county.
Gould, F. G.....	Excelsior, Hennepin county.
Gott, B.....	Arkona, Ont.
Griese, Chas. H.....	Cleveland, O.
Grimes, J. T.....	Minneapolis, Hennepin county.
Hatfield, W. H.....	Dover, Olmsted county.
Harris, J. S.....	La Crescent, Houston county.
Hart, John.....	Winona, Winona county.
Hoag, M. J.....	Rochester, Olmsted county.
Hodges, L. B.....	St. Paul, Ramsey county.
Hollister, U. S.....	St. Paul, Ramsey county.
Jordan, E. B.....	Rochester, Olmsted county.
Kenney, Seth H.....	Morristown, Rice county.
Knaupheide, Rudolph.....	St. Paul, Ramsey county.
Lacy, Chas. Y.....	Minneapolis, Hennepin county.
Latham, A. W.....	Excelsior, Hennepin county.
Mason, Geo. W.....	Rochester, Olmsted county.
McHenry, Wm.....	St. Charles, Winona county.
McKinstry, A. W.....	Faribault, Rice county.
Miller, C. F.....	Dundas, Rice county.
Moritz, Wm.....	St. Paul, Ramsey county.
Norquist, John.....	Red Wing, Goodhue county.
Pearce, M.....	Rochester, Olmsted county.
Perry, B. F.....	Rochester, Olmsted county.
Phelps, Wm. F.....	Winona, Winona county.
Phillips, A. J.....	West Salem, Wis.

Porter, R.....	Rochester, Olmsted county.
Schmaurs, F. J.....	Lake City, Wabasha county.
Sias, A. W.....	Rochester, Olmsted county.
Smith, Truman M.....	St. Paul, Ramsey county.
Smith, T. Tunis.....	St. Paul, Ramsey county.
Somerville, Wm.....	Rochester, Olmsted county.
Thompson, Josiah.....	Minneapolis, Hennepin county.
Turner, H. A.....	Faribault, Rice county.
Twitchell, Dr.....	Chatfield, Fillmore county.
Wachlin, Wm.....	Faribault, Rice county.
Webb, Isaac W.....	St. Paul, Ramsey county.
Wilcox, E.....	Trempeleau, Wis.
Willoughby, John.....	Newport, Washington county.
Wyman, Sam.....	Waseca, Waseca county.

HONORARY MEMBERS.

Geo. Peffer.....	Pewaukee, Wis.....	elected 1874.
Miss Hortense Share.....	Rosemount, Minn.....	elected 1877.
Mrs. C. O. Van Cleve...	Minneapolis, Minn.....	elected 1877.

LIFE MEMBER.

Mrs. Wm. Paist...	St. Paul, Minn.
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FRUIT LISTS,

AS APPROVED OR REVISED AT THE ANNUAL MEETING AT ROCHESTER,
JAN. 15TH TO 17TH, 1878.

NOTE.—It should be remembered that negative votes are not always unfavorable ones. Those casting them may be in favor of placing the variety *either* in a higher or a lower list.

APPLES.

Recommended for general cultivation—

Duches of Oldenburg. Wealthy.

Recommended for planting in limited quantities—

Tetofsky.

Recommended for general cultivation in favorable localities—

Haas.	Price's Sweet, (Unanimous vote.)
Plumb's Cider, (Unanimous vote.)	Saxton.

Recommended for favorable localities in southern portions of the State—

St. Lawrence.	Fameuse, (Unanimous vote.)
Utter's Red.	Talman's Sweet.

Recommended for general trial throughout the State—

White Astrachan, (Unanimous vote.)	Elgin Beauty, (Unanimous vote.)
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Recommended for trial—

Melinda, (Unanimous vote.)	Walbridge, (Unanimous vote.)
Stewart's Sweet, (Unanimous vote.)	Peach, (Unanimous vote.)

Recommended for trial by amateurs and pomologists (all by unanimous vote)—

Alaska.	Queen of Elgin.
Julia.	Rollin's Pippin.
Molly.	Rollin's Russet.
Clayson.	Rollin's Prolific.
Kimball.	Wabasha.
Hart's Seedling, No. 7.	Hart's Seedling, No. 11.
Viola.	Clara.

CRAB APPLES.

Recommended for general cultivation.

Transcendent, (9 for and 5 against)	Orange, (Unanimous vote.)
Hyslop, (Unanimous vote)	Early Strawberry, (Unanimous vote.)
Beach's Sweet. (Beecher's) (5 for and 2 against.)	

Recommended for planting in limited quantities.

Conical, (8 for and 1 against.)	Maiden's Blush, (Unanimous vote.)
Hesper Blush, (Unanimous vote.)	

Recommended for general trial.

Powers' Large Red, (13 for and 2 against.)	Virginia, (Unanimous vote.)
General Grant, (8 for and 5 against.)	Beach's Red, (Unanimous vote.)

Recommended for trial by amateurs and pomologists.

Minnesota, (Unanimous vote.)	Brier's Sweet, (Unanimous vote.)
Aiken's Str. Winter, (Unanimous vote.)	Quaker Beauty, (10 for and 2 against.)
Whitney's No. 20, (Unanimous vote.)	Woodland Winter (6 for and 2 against.)
Alaska, (Unanimous vote.)	Hutchinsons Sweet, 6 for and 2 against

Varieties quite exempt from blight.

Orange, (Unanimous vote.)	Minnesota, (Unanimous vote.)
Beach's Sweet, (Unanimous vote.)	Power's Large Red, (Unanimous vote.)
Conical, (Unanimous vote.)	Early Strawberry, (9 for and 1 against.)
Maiden's Blush, (Unanimous vote.)	Virginia, (6 for and one against.)
Whitney's No. 20, (Unanimous vote.)	Beach's Red, (Unanimous vote.)

Varieties quite liable to blight.

General Grant, (Unanimous vote.)	
Transcendent, (10 for and 1 against.)	Hyslop, (14 for and 1 against.)

Varieties recommended and not named in these lists were not assigned, either for want of sufficient knowledge, or because they are not decidedly exempt from blight or decidedly liable to it.

GRAPES.

Recommended for general cultivation.

Concord, (Unanimous vote.)

Delaware, (Unanimous vote.)

Recommended for planting in limited quantities.

Hartford Prolific, (8 for and 1 against.) Northern Muscadine, (Unanimous vote.)

Clinton, (11 for and 1 against.) Eumelan (8 for and 2 against.)

Roger's No. 15, or Agawam, (Unanimous vote.)

Recommended for trial.

Iona, (9 for and 1 against.)

Janesville, for its earliness, (Unanimous vote.)

Roger's No. 4 or Wilder, (Unanimous vote.)

Roger's No. 9 or Lindley, (Unanimous vote.)

Roger's No. 19 or Merrimack, (Unanimous vote.)

STRAWBERRIES.

Recommended for general cultivation (unanimous vote)—

Wilson's Albany.

Recommended for general cultivation for near market and home use (unanimous votes)—

Downer's Prolific.

Charles Downing.

Green Prolific.

Countess de Haricourt.

Recommended for trial—

Seth Boyden, (Unanimous vote.)

Col. Cheney, (Unanimous vote.)

Kentucky, (Unanimous vote.)

Prouty's Seedling, (Unanimous vote.)

Michigan Seedling, (6 for and 1 against.)

RASPBERRIES—BLACK-CAPS.

Recommended for general cultivation—

Doolittle.

Seneca.

Recommended for trial—

Ontario.

RASPBERRIES—RED.

Recommended for general cultivation—

Philadelphia.

Turner.

CURRANTS.

(Action of 1877.)

Recommended for general cultivation—

Red Dutch.

Victoria.

White Grape.

Recommended for general cultivation as a black variety—

Black Naples.

Recommended for trial—

Stewart's Seedling.

PLUMS.

(Action of 1876.)

Resolved, That in view of the vast number and variety of native plums of great excellence in our State, and the uncertainty of getting a genuine article by importation, therefore we recommend that our people depend principally upon our own native plums for a supply.

Recommended for trial—

Miner. (13 for, 4 against.)

De Soto. (10 for, 8 against.)

GOOSEBERRIES.

None were recommended.

EVERGREENS.

List adopted 1876 and approved 1877. The votes recorded are those of 1876.

White Spruce, 1st. (10 for, 8 against.)
 Norway Spruce, 2d. (11 for, 8 against.)
 Scotch Pine, 3d. (13 for, none against.)
 Balsam Fir, 4th. (15 for, none against.)
 White Pine, 5th. (11 for, none against.)
 American Arbor Vitæ, 6th. (11 for, 2 against.)
 Red Cedar, 7th. (11 for, 4 against.)
 Red or Norway Pine, 8th. (11 for, none against.)
 Austrian Pine, 9th. (9 for, 7 against.)
 Mountain Pine, 10th. (8 for, none against.)
 Siberian Arbor Vitæ, 11th. (14 for, none against.)
 Trailing Juniper, 12th. (13 for, none against.)

PROCEEDINGS

AT THE

WINTER MEETING,

HELD AT ROCHESTER, TUESDAY, WEDNESDAY AND THURSDAY,
JANUARY 15, 16, AND 17, 1878.

The society met pursuant to the following notice which was forwarded by postal card to the principal newspapers and the leading horticulturists of the state.

ANNOUNCEMENTS.

MINNESOTA STATE HORTICULTURAL SOCIETY,
Minneapolis, Dec. 24th, 1877.

The annual winter meeting of this society will be held at Rochester, beginning at 10 o'clock A. M., Tuesday, January 15, 1878, and continuing three days. The following have already promised papers on the subjects named, and favorable answers are daily expected from others.

U. S. Hollister, Esq., St. Paul, "The Growing of Seeds for Market."

Hon. L. B. Hodges, St. Paul, "Planting Trees for Shade and Ornament on Streets and Roads."

E. Wilcox, Esq., Trempealeau, Wis., report on "The Propagation of Hardy Trees."

Hon. R. J. Mendenhall, Minneapolis, report on "Injurious Insects."

J. S. Harris, Esq., La Crescent, report on "The Horticultural Exhibit at the State Fair."

Prof. Chas Y. Lacy, Minneapolis, "Education for Farmers."

The following subjects have been proposed for discussion: "Commercial Fertilizers—does it pay to use them in the West?" "Home made Fertilizers—best plans for securing, composting and applying for fruit and vegetable gardens;"

"Horticultural Literature and Libraries;" "The Orchard—best location, aspect, soil and protection.

Messrs. Miller of Dundas, and Kenny of Morristown, will be present with samples of sugar and syrup, and prepared to answer questions relating to their production. The various fruit lists adopted or approved last year will be taken up for revision. Every facility will be given for the exhibition of fresh and preserved fruits, vegetables and other horticultural products; and it is hoped that this feature will be even more prominent than heretofore. The citizens of Rochester will give free entertainment to members of the society and those becoming members. Such are requested to forward their names to S. D. Hillman, Rochester, Secretary of local committee. All are cordially invited to attend the meeting. The usual reductions in railway fares are expected. No formal programme will be printed, but a second announcement will follow this in a few days.

CHAS. Y. LACY,
Secretary.

MINNESOTA STATE HORTICULTURAL SOCIETY,
Minneapolis, January 11th, 1878.

The annual winter meeting of this Society will be held at Rochester, beginning at 10 o'clock A. M., Tuesday, January 15th, 1878, and continuing three days. The following papers will be on the programme in addition to those already announced:

Mrs. W. L. Breckenridge, Rochester, paper on some floricultural subject.

Col. Geo. Healey, Rochester, "Location, Laying Out, Planting and Care of Cemeteries."

Wm. Somerville, Rochester, paper on "The Form of Orchard Trees."

E. B. Jordan, Rochester, (subject not announced.)

M. Pearce, Rochester, "Soil and Cultivation for Fruit Trees."

J. C. Kramer, La Crescent, paper on "Grapes," paper on "Potatoes."

O. F. Brand, Faribault, (subject not announced.)

Judge S. W. Eaton, Rochester, will address the Society.

The following subjects, in addition to those already announced, will be opened for discussion: "The Congressional Tree Planting Act;" "Sorghum, Its Cultivation and Manufacture;" "Uses of Crab and Siberian Apples;" "Probable Effects of the Warm Weather of December, 1877;" "Game, Trespass, and other Laws Affecting the Horticulturist;" "The Garden Pea—Cultivation, Varieties, &c.;" "The Tomato."

Interesting reports are expected from several committees, and the exhibition of fruits, &c., will, it is hoped, be large and fine. The citizens of Rochester will give free entertainment to members of the Society and those becoming members.

The annual membership fee is one dollar, but all are cordially invited to attend the meeting. The meeting will be held in Good Templars' Hall, Brown's Block.

The Winona & St. Peter R. R. will *return* members at one cent per mile. The Chicago, Milwaukee & St. Paul R. R. has not yet been heard from, but it is confidently expected that it will, as heretofore, return members at one-fifth fare.

CHAS. Y. LACY, Secretary.

Owing however to lateness in the arrival of members, the meeting was not called to order until 2:45 p. m.

ADDRESS OF JUDGE EATON.

At that hour Judge S. W. Eaton, of Rochester, delivered the following address of welcome to the society:

Gentlemen of the Minnesota State Horticultural Society:

I could wish that one more thoroughly versed in the processes and details of your occupation had been selected to occupy the position in which I find myself placed, but yielding to the earnest solicitation of friends, I have consented to address you at this, your yearly convocation, feeling that I shall receive all reasonable indulgence at your hands. My remarks, from the reasons stated, will necessarily be general in their character and import.

I see before me gentlemen from various localities in our beautiful and highly productive state, representatives of a noble and useful occupation. You have, I take it, assembled at our beautiful and thriving city to compare notes and communicate results of your labor and experiments for the past year; to interchange opinions, discuss methods and mature plans for advancement of horticulture in our State.

Your wisdom and business sagacity are apparent in the formation of a society to advance the interests and ensure the success of the branch of industry in which you are engaged. In concert of action there is strength; in co-operation, the grandest results are achieved. In associated effort knowledge is obtained and experience and advantages utilized which would be quite impossible in individual action.

Yours is an honorable and a useful occupation. Among the varied instrumentalities of comfort, refinement and civilization, horticulture occupies a prominent and an honored position. Wholesome, luscious fruit, as all know, constitutes an important factor in the world's living, and no table, however humble, is considered complete without some portion or variety at least of these toothsome productions.

Besides the delicious fruits, no inconsiderable portions of which are being supplied through the efforts of our horticulturists, we should mention the not much less useful, but more ornamental trees, shrubbery, plants and flowers. It has been said that he who causes two blades of grass to grow where only one grew before, is a public benefactor. On the same principle, but in a larger sense, he who causes trees, shrubs, plants and flowers to grow where nothing grew before, either useful or beautiful, confers on the public a lasting good. Indeed, it is not, perhaps, too much to say, that in this state, where there are large treeless districts, the propagation of trees is one of the most necessary and important features of our industries. To my mind, a treeless habitation is no home at all. Even the most elegant and costly residence, built on the most beautiful and eligible site, lacks one of the most important features and attractions of a home, unless surrounded, or at least flanked, by a liberal and tasteful show of trees and shrubbery.

Who, that has any taste, love or appreciation for the beauties and attractions of home, would think of building a house, even of inferior dimensions, on the bleak and unbroken prairie? Fine, vigorous trees, beautiful in appearance, useful in breaking the force of the winter winds and yielding their grateful shade,

impart to any home a charm and an attractiveness which nothing else, procured at the same cost, can afford. The good taste and refinement of the family circle are most happily evinced in the propagation of beautiful plants and lovely flowers in and about the home. More than this, your cemeteries, your streets and farms, your walks, your yards and courts are rendered more beautiful and attractive by a generous and judicious cultivation of shade and ornamental trees—a fact, I am happy to state, which is becoming more generally appreciated in city and country throughout the State.

In the propagation of ornamental trees and of plants, the horticulturists of the State have, I believe, met with general and gratifying success. Also, in the cultivation of the smaller fruits, suited to our soil and climate satisfactory and profitable results have been realized; but from the best information which I have on this subject, I feel compelled to say that in apple raising, much failure and loss have attended the best and most careful exertions of the nurserymen of the State. And yet, we are unwilling to believe that in a State celebrated all over the world for its remarkable fertility of soil and its large variety of productions, the apple cannot be successfully and profitably propagated. We are the more encouraged in this hopeful view from the improved results which we have witnessed in this direction within the past few years. Our horticulturists, profiting by experience, and acquiring knowledge through patient, intelligent investigation and effort, will demonstrate to us to-day that apples, fine, fair and luscious, can successfully be grown in Minnesota. If you doubt this proposition, you should visit, in the proper season, the orchards and nurseries scattered all over the State, or attend the annual county fairs, and you will be convinced. There can be little or no doubt that many of the people of this State have been grossly cheated or deceived in the purchase of apple trees—I refer solely, to this kind of property which has been imported here from other States. In, perhaps, a majority of cases, varieties of trees not adapted to our soil and climate, have been selected, taken up without proper care and boxed up, or otherwise; these trees have been shipped to customers in Minnesota, and when they have arrived here, they were as utterly dead as a last year's brush heap. For years this kind of trade went on, costing our farmers and others large sums of money, besides subjecting them to much labor, cruel disappointment and deep disgust. I do not maintain that there was intentional fraud on the part of the nurserymen in other States in these transactions; all the parties may have been, and probably were, honest; and yet, the ugly fact that our people paid out a good deal of money for apple trees and did not succeed in getting one in one thousand to live and thrive, remains undisputed. Possibly, apple trees started or propagated in another State, hundreds of miles away, may be brought here and cultivated with success, but I am of the opinion that it is not a safe or profitable investment. To be successful, even in a moderate degree, due reference must be had to the varieties selected and proper care in shipping and handling must be observed. However, to me it seems that trees propagated entirely in the State will be found to be the only safe and reliable ones.

I have intimated that the culture of the apple in our State has thus far met with indifferent success. It is not the case, I believe, that any of the horticulturists in the State have experienced as gratifying results in this regard as they could have wished. None have been wholly successful, neither have any to my knowledge, met with entire failure. In reference to the cause of failure, you, gentlemen, are much better qualified to instruct me than I am to enlighten you. You will, however, I know, pardon me for briefly hinting at some of the main

causes which, in my opinion, have heretofore tended to prevent more favorable results. Prominent among these causes may be mentioned the fact that fruit growers have failed in ascertaining the varieties of the apple best suited to our soil and climatic conditions. It is confidently believed—yes, I may say it has already been demonstrated, that there are varieties of apples which, with the proper treatment and care, will do well in our State, both as respects growth and fruitage. Your efforts in the future will more fully demonstrate the best kind of trees to propagate, and your good sense and sagacity will not permit you to hesitate long in adopting the varieties which promise the largest success.

The proper season of the year as well as the best method of transplanting are, of course, essential conditions and cannot have escaped your patient and intelligent observation.

The different varieties of soil, the location of the orchard, the kind of mulching—or whether any is necessary—pruning, the destruction of borers, caterpillars and other pests, are all questions and conditions which in my judgment, are intimately connected with this pursuit, and to which you, of course, have given your earnest and untiring attention.

The citizens of our highly favored State have an interest and feel an honorable pride in its prosperity, its increasing wealth, and in the development of its grand and illimitable resources, and whatever legitimate and honest industry is calculated to subserve these desirable ends should receive the encouragement and fostering care of our people.

The soil of our vast prairies and stretches of wood land, in fertility and in ease of culture, confessedly unsurpassed by that of any other State or district in the world, only awaits the skillful touch of an intelligent and well-directed industry, under the blessing of heaven, to yield a generous and bountiful harvest. From economical considerations, if from no other, we, as a State, should produce, so far as practicable, whatever of the comforts and luxuries of life may be desirable. No money should be sent abroad for any of these which can, with reasonable care and effort, be produced at home. If I am correct in this view, we should foster and encourage the interests and aims of horticulture.

The propagation of wholesome, nutritious fruits, the cultivation of trees, shrubbery, plants and flowers must, in the very nature of the occupation and its associations, be pleasing, delightful and elevating. Who is there that, dwelling and toiling among these beautiful and attractive surroundings, does not feel stirred by delightful and pleasurable emotions, at once pure and refining? Indeed, it is claimed, and without doubt justly so, that the intelligent and judicious tilling of the soil brings the mind into nearer communion with the Infinite Creator than any other merely earthly occupation. Brought into more immediate contact and relationship with the operations of nature's beneficent productive forces, and with a live, abiding faith in the grand results, laden with the comforts, luxuries and attractions of home and society, the meditative, reflecting mind looks up "through nature to nature's God."

I would impress upon all the importance of making the home pleasant and attractive. Farmers, whether wealthy or possessed of limited means, as well as the residents of cities, towns and villages, may add largely to their happiness, enjoyment and well-doing by giving more and earnest heed to these suggestions. Would parents have their children love home; would they have them cheerful, contented and happy under the parental roof, they should try to invest that home with charms and attractions suited to the young and admiring mind. Children and youth, with minds pure, innocent and susceptible, are passionately

fond of the beautiful and the ornamental. They must have something lovely and attractive at home, or they will grow churlish and discontented and seek the gratification of those innate desires away from the home of their childhood, and which is too often the case, among scenes and associations hurtful and injurious to both mind and body.

To furnish these luxuries and ornaments to which we have alluded and which are so essential to our comfort and enjoyment as a people, is especially the task of our horticulturists, and that they may be prospered in their pleasant and highly useful occupation is the earnest wish of the people of our young and flourishing State.

Your association, as I learn, was formed in Rochester, eleven years ago. Since that time our city has had a creditable and gratifying growth. Four large and extensive nurseries are established here and are doing a prosperous, and I doubt not, a paying business. For evidence of our material prosperity we point you to the broad acres of fertile lands which surround our city on every side, to our capacious warehouses and elevators, our fine business blocks and excellent hotels, our elegant homes and pleasant streets. That our educational and religious interests have been nurtured and directed with proper care and effort, our comfortable school buildings and our dozen neat and elegant churches will attest.

Gentlemen from abroad, on behalf of the resident members of your society, I cordially welcome you to the kindness and hospitality of the citizens of Rochester.

PRES. SMITH'S REPLY.

At the conclusion of the address President Smith thanked Judge Eaton for the kind greeting which he had extended to the State Horticultural Society, and pledged the efforts of the society to bring about the results mentioned. These he said had been the efforts of the society heretofore and would be in the future. He compared Rochester in Minnesota to Rochester in New York, as being a similar center of fruit-raising and tree-growing.

At the conclusion of President Smith's reply, a vote of thanks was tendered Judge Eaton and a copy of his address requested for for publication.

COMMITTEES.

President Smith then announced the following committees:

On finance, Messrs. Kenney, Hollister and Jordan.

On the articles on exhibition, Messrs. Latham, Brand and Sias.

On the address of the president, Messrs. Hoag, Harris and Day.

The secretary having failed to present a formal programme, Messrs. Lacy, Pearce and Harris, were appointed a committee to prepare one.

COMMERCIAL FERTILIZERS.

This subject was called up for discussion.

Mr. Elliot. We have plenty of fertilizers at home without the aid of foreign ones, but the day is coming when we shall need them.

Mr. Hollister. I have had some experience with them; have made trials with Peruvian guano and bone dust and have decided in favor of home-made manure. Have used two tons of gypsum on pieces of corn, potatoes, peas and clover—have seen no good results from it. Could not tell where it had been sown two weeks later, although sown in strips through the fields.

Wood Ashes.

Mr. Kenney. Would like to hear about the use of wood ashes.

Mr. Hollister. They have been one of the best of fertilizers with me. I think one ton of them worth two of gypsum. Have put them on corn when three inches high, and they were of temporary benefit. Have sown broadcast on peas just before blossoming with good results. Have got the best results from an application to a newly set bed of strawberries at the rate of five to ten bushels per acre.

Mr. Elliot. Think they increase the yield of onions one-third.

Mr. Wilcox. Have used gypsum on clover and it increased the yield one-third; saw no good from its use on strawberries.

Mr. Kenney. From three-fourths of an acre I obtained two hundred and forty bushels of onions; the manure was ashes sown broadcast. Have put ashes on strawberries at the rate of one peck to the rod and think them excellent for this fruit.

Mr. Wyman. Have used ashes and horse manure together for onions and obtained good results.

Mr. Phillips. Have sown gypsum on clover and obtained three and a half bushels of seed per acre to two bushels where gypsum was not sowed.

Mr. Hollister. Think that in mixing ashes and horse manure no permanent result will be obtained though the immediate effect will be very marked. The ashes will liberate the ammonia which will destroy its permanency as a fertilizer.

Mr. Hodges. I think the best fertilizer for onions is to herd cattle on the ground previous to breaking. Have sowed seed broadcast on such ground and thinned to four or five inches. The onions grew so large they had to stand on edge to get room.

PAPER OF HON. L. B. HODGES.

Mr. Hodges was called upon to read his paper, which was as follows :

PLANTING TREES FOR SHADE AND ORNAMENT ON STREETS AND
ROADS—WHAT TREES TO PLANT, AND AND HOW TO PLANT
THEM.

The foregoing is the heading of the accompanying article. The text was furnished by Prof. Lacy. I don't know what book he got it out of; neither do I care.

There ought to be a good many sermons preached on that text to all the people of Minnesota. Right here in Rochester it don't seem so necessary. The people here have appreciated the importance and necessity of this work, and have taken hold of it in earnest. The changed appearance of this town-site, as between 1854 when I first camped on it and now, 1878, is due more to tree planting than any other one class of improvements.

Great as has been the change in this immediate vicinity within so short a time, still greater changes have occurred in other localities. Villages and cities originally built on the open prairie, without a tree or shrub in sight, whose streets and avenues were formerly raked fore and aft by the fierce blasts of winter, and scorched by the blazing suns of summer, have by the intervention of the tree planter, been converted into bowers of beauty, protected alike from furious wind and blazing sun.

No investment of time and money is more satisfactory or more permanently useful than that employed in planting forest trees along the lines of our public highways. In a prairie country like ours, no investment adds so much to the beauty of the country or the ready cash value of the real estate so adorned. The prosecution of this good work appeals alike to the best judgment and most cultivated taste.

Much has been done in this direction, but far more remains yet to be done. We have done just enough to thoroughly demonstrate the practical nature of the work, the thorough adaptability of our prairie soil to develop magnificent specimens of forest trees.

In the tree planting returns for 1877, the number of rods planted to trees and hedges along the public highways of Minnesota is given as 265,633, equivalent to 642 miles and 192 rods. The returns are imperfect, incomplete. One thousand miles would be much nearer the mark. This is a good beginning, but only a beginning.

Have any of you figured on the probable number of miles of public highway in the prairie portion of Minnesota? There are full five hundred prairie townships in what is known as the treeless region of Minnesota. Then there are at least half as many more prairie townships in other comparatively well timbered counties, like Olmsted and Dodge. This rough estimate, which I think is below the actual figures, gives us 750 townships of prairie. Allowing thirty-six miles of public highway to each township gives us 27,000 miles. This must be doubled to give us a row each side the highway, making a total of not less than 54,000 miles yet to be planted along the highways of the prairie regions of Minnesota; enough to reach twice around the globe and some four thousand miles to lap

over. Who can correctly estimate the climatic effects and the ameliorating influences following so grand a work? I assume, as a matter of course, that in the treeless region, the planting would be close enough to form staunch and permanent wind breaks.

The protection thus afforded to growing crops would of itself be of inestimable value. The protection afforded to orchards and other fruit growing institutions would alone amply repay the cost, while the comfort afforded to man and beast would be beyond the power of figures to express.

VARIETIES OF FOREST TREES BEST ADAPTED FOR THIS WORK.

This is so largely a matter of taste that no list that could be made would suit every one. This task must conform to facts and to common sense. The adaptability of the soil to each variety of forest tree must be recognized. The natural limits that have been assigned to each variety of forest tree must be borne in mind, and then the peculiar service required in the particular locality to be benefited, and, finally, the pecuniary ability of the owner of the real estate must be taken into account.

For merely shade, in my opinion no tree can excel the White Elm (*Ulmus Americana*). As an ornamental shade tree it is absolutely unapproachable. It is undoubtedly the most "magnificent vegetable of the temperate zone." It is long lived, hardy, and a rapid grower. But it needs room to spread itself. Planted sixty feet apart their tops will interlock long before reaching maturity. The White Elm will do well on any Minnesota prairie from Iowa to Manitoba, but grows more rapidly on river bottoms and rich, moist soil. It seems to possess the advantage of withstanding the bad effects of dust and smoke, and would consequently be better adapted to planting in large towns than most other varieties of trees. In this connection, let me warn the fellows out on the broad prairies not to plant too large White Elms. I have seen them transplanted from two to three or four inches in diameter, trimmed to bare poles, tops cut off say twelve to fifteen feet from the ground, and in three years develop so much top that the wind would blow them over so far as to leave them standing at a very acute angle. They seem to develop top more rapidly than root. On the rich, moist alluvial soil of the western counties plant small trees.

Acer Saccharinum—Sugar Maple, Rock Maple.

The Sugar Maple as a shade and ornamental tree can not be too highly prized. It is indigenous to Minnesota, but is more particular about its location than the White Elm. In this state it prefers well drained localities. A locality in which the White Elm would flourish to perfection would in many instances prove fatal to the Sugar Maple. I have had but poor success in planting them on level prairie with deep clay subsoil. Such localities should be underdrained for the Sugar Maple. I very much doubt if they can be made to live where the ground is saturated with moisture during the growing season. On the second bench of the streams, and along the banks and sides of ravines, on any tolerably good soil, and on hill sides, the Sugar Maple flourishes and reaches its best proportions. Poor sandy soils are not suited to the growth of the Sugar Maple, neither are most of the rich bottom lands of the Red River Valley.

Juglans Nigra—Black Walnut.

All things considered, I am strongly inclined to the belief that the Black Walnut is the most valuable forest tree that can be grown in Minnesota. Its growth is very rapid, and when fully developed is one of the largest of our forest trees. It prefers a rich, moist soil, but will flourish and make a very satisfactory growth on any number one prairie not too far north. The Minnesota Valley seems to be the northern limits for this tree in that portion of Minnesota west of the Mississippi river. I have never seen any Black Walnut to amount to any thing north of the valley of the Minnesota river. They are a tender tree when young, and we occasionally get a winter in which they require considerable protection. As a shade and ornamental tree it sometimes rivals the White Elm. When planted as a shade tree give it plenty of room, that its natural habit of throwing out a low broad top may be encouraged. Bryant tells of a Black Walnut tree at three feet from the ground twenty-five feet in circumference. "At the height of twelve or fifteen feet the trunk divides into several branches, each of which by itself would constitute a large tree; the whole forming an immense canopy, overshadowing an area one hundred and fifty feet in diameter."

Juglans Cinerea—Butternut.

When grown in open ground throws out a low spreading top; is a hardy, rapid grower, and in all respects a desirable shade and ornamental tree. This tree and its first cousin, the Black Walnut, ought to be considered in the double character of not only forest but fruit trees. A Black Walnut orchard, or a Butternut orchard, propagated from the seed planted on the right kind of soil, would soon throw in the shade any apple orchard in Minnesota; would come into bearing as quick, would grow faster, stand more grief, and bring more bushels of either fruit or dollars, in the long run. I suggest, as a practical measure, the offering of liberal premiums to encourage the planting of Black Walnut and Butternut orchards.

Tilia Americana—Linn, Linden, Basswood.

This is another very desirable shade tree. Rapid grower, hardy, long lived. Will grow and develop well on any good farming land, but prefers a rich, moist, cool soil. Furnishes good shade and shelter for man and beast, and also bountiful crops of flowers, from which the "little busy bee" manufactures a most excellent article of honey. Basswood suitable for transplanting is not easily found in large numbers in our native forests, and the main source of supply for shade trees must be from propagation in forest tree nurseries.

Fraxinus Americana—White Ash.

One of our most valuable forest trees. Very hardy. Rapid grower, and when planted wide apart throws out a beautiful wide spreading top. Most of the prairie soil of Minnesota is well adapted to the growth of the White Ash.

This tree will do its best in a cool, deep, moist soil. It don't amount to much on a warm, dry, sandy soil; is not afraid of cold weather; deserves a higher rank in public estimation. For general planting on our northwestern prairies, no forest tree merits more general cultivation and attention. It is easily propagated from seed, and can be furnished by millions; cheap as corn fodder.

• *Fraxinus Sambucifolia*—Black Ash.

For merely a shade and ornamental tree, perhaps preferable to White Ash; will grow best on ground too wet for White Ash; will flourish and develop magnificently on ground too wet for most any other timber except it may be tamarac.

Populus Angulata, or *Populus Monilifera*—Cottonwood.

The highly refined, fastidious and aristocratic element of our large towns and cities unite in despising this noble tree. But who cares? It has its own merits, merits that will cause it to be propagated, cherished, nourished and protected by willing hands and loving hearts, until the great interior treeless region of the North American continent shall have been reclaimed and become one of the traditions of the past. When the marble monuments vainly erected to perpetuate the memory of the names of its traducers shall have crumbled into dust; when even the state Horticultural Society has ceased to exist, even then will this monumental tree shed its blessings and its cotton alike upon the just and the unjust.

I propose to stand by the Cottonwood. Whether planted on a sand bank or a river bottom, in the door yard or in a desert, on the prairie or in the timber, the result is a great, sturdy, healthy forest tree. It is a success, and that's why people plant it. It don't fool away years of precious time getting ready to do something, but it is up and a coming from the word go. It is emphatically a pioneer tree. This and the White Willow will do more to prepare the way for the cultivation of fruit trees than any other agencies I can think of.

I have enumerated enough of the deciduous trees. I could easily have extended the list to twice its length. But "Enough is as good as a feast."

Evergreens.

I shall not branch out much on evergreens; had rather wait and hear from John Kepner. I desire to say a good word for the Scotch Pine. I find it absolutely hardy, and a thrifty, good grower on the broad prairies of Kandiyohi and Stevens counties; have had them growing out for nearly four years. They always look bright and healthy. They are undoubtedly a good tree to plant by the roadside. It is the great lumber tree of Scandinavian nations of northern Europe. It delights in buffeting old Boreas; is admirably adapted for wind-breaks, and will be used extensively for this purpose just as fast as the prairie farmer becomes able to pay for it.

I have experimented with various sorts of evergreens on the prairies, and have had more comfort from the Scotch Pine than all others combined.

The European Larch, about which volumes have been written, has so far proved hardy, healthy and a rapid grower on the main line of the St. Paul and Pacific railroad, where it has been planted as an experiment in different localities and on widely varying soils. From experience so gained I should not be afraid to go in tolerably heavy on the European Larch.

HOW TO PLANT THEM.

It is all surplusage trying to tell this crowd how to plant trees. You know as much about it as I do; but it may be this paper may fall into hands not so experienced as yours. And so I commence by saying, the first thing to do is to pre-

pare the ground. In commencing *de novo* on the prairie, I should first break the sod in June. I should let it sweat till October. I would then backset it, bringing up two or three inches of new ground. (I am supposing you are preparing to plant along the highway the whole length of your farm. In the spring I would plant it to potatoes. I prefer potatoes for this purpose because the ground gets worked over more in growing this crop than any other you would be likely to plant. After digging the potatoes in September, I would then plough the ground as deep as I possibly could; the deeper the better. And then I would harrow thoroughly. I would have all the holes dug before I took up a tree, and I would dig big holes, not very deep but a good ways across; deep enough so you can throw in dirt, good mellow black soil, forming a little mound in the bottom of the hole to set the tree on. Then, while an assistant holds the tree in an upright position, manipulate the fine, soft, mellow earth all among the roots, spreading them out full length, so they nestle and lay comfortable like and natural. If any of the roots are bruised and mangled trim them off smoothly with a sharp knife; and also cut out all dead roots.

Too much care can not be exercised in transplanting forest trees. In taking them up get all the root you can, especially small fibrous roots. Don't allow the roots to be exposed to sun or wind. Don't let them freeze while out of the ground. Plan your work so as to have the least possible number of hours intervene from the time the tree is lifted from its native spot till it is in the ground again. Should unavoidable delays occur, heel them in, or better still, bury them all over in loose earth, taking them out as you plant them. After getting the roots comfortably arranged, shovel the fine, black, mellow soil in, pressing it firmly. You don't want to tramp it.

I think most good sized trees, especially the Cottonwood, do better planted somewhat deeper than they originally stood.

Don't drown your trees with water. Many people heave in several buckets of water in each hole. This is unnecessary. Your tree don't want to stand in a mortar bed. More trees are killed by too much water than by too little. If possible, mulch thoroughly as soon as planted. Mulch with any good manure. Chip manure is best. Old hay or straw is good.

If the ground is reasonably moist when the planting is done, good, thorough mulching will protect the tree from drouth far more effectually than indiscriminate bucketfuls of cold water. Cold water is a good thing in its place, but needs to be used with some judgment.

Don't mutilate your trees. This trimming up to bare poles and then cutting the top off may be necessary in very exposed localities, as too much top resists the wind to such an extent as to loosen the hold of the roots to the soil. This won't do. In such localities plant small trees. A tree no larger than a rawhide riding-whip, with its full complement of fibrous roots, will soon get away from such trees as are usually planted along highways; *provided, always*, you plant it in ground which has been thoroughly prepared, and then give it the same care, protection and cultivation you do your corn when you get fifty bushels per acre. If I was in a hurry, and couldn't wait, and must have big trees at once, I would take up root enough so there would be no necessity of cutting off the top; only trimming the top into symmetry. It would be, perhaps, necessary to steady and brace it against the wind until well rooted. How to do this your own ingenuity should suggest.

AFTER CARE.

In planting a line of shade trees along a public highway, I should aim to dedicate a strip of ground at least one rod wide to this purpose. I should plough that strip and harrow it at least twice each year, between May and August, keeping down all weeds and grass. Every year I should work the mulching when well decayed into the ground, replacing it from year to year, until the tree is firmly established and able to help itself to food and drink. Bear in mind that a young tree needs care, protection, feed and water, as much as a young steer, and the better treatment either gets the better it grows and prospers. The mulching and cultivation is to the tree what corn, hay and water is to the steer.

I can not too strongly condemn the infamous and brutal treatment given to trees by men who ought to know and to do better. The man who handles trees in transplanting, as he would fence rails or posts, deserves to lose them, and generally does. To illustrate; last spring I saw a large box of ornamental trees, mostly evergreens, on the platform at Willmar. After lying there exposed to wind and sun several days, I saw them opened. The moss and other mulch they were packed in had prevented the roots from drying, and had they *at once* been properly planted, could have been saved. It seemed a whole neighborhood had clubbed together, and each one's package was bound up separately. These packages were taken from the box and laid on the platform, where for several days they were exposed to drying winds and scorching sun. They were all killed within twelve hours; but those fellows would come every day or two and carry off a bundle and plant them, all the same; and you can't make one of them believe that nurseryman is any better than a horse thief.

We must preach to the people that a tree, if not exactly animal, is, at least, a living, breathing organism, as susceptible to good or bad treatment as anybody; as quick to appreciate good treatment as you or I, and as quick to resent bad treatment. In fact there are few classes of living beings who tolerate less bad treatment than trees.

WHEN TO PLANT—SPRING OR FALL?

This is a question often asked. I do not consider it of as much importance as many do. It is not half as important as a thorough preparation of the soil, mulching and thorough cultivation. With most forest trees it really makes but little difference. For several years I have planted largely, commencing in the fall as soon as the leaves fall; planting until winter comes, heeling in or burying what is left, and in the spring commencing again and planting right along till 20th of May, or until the leaves start. Some seasons there is no perceptible difference between spring and fall planting of most varieties of forest trees. Should it set in very dry, as it sometimes does early in spring, and continue dry for several weeks, your spring planting will suffer to a certain extent, limited, however, by the amount of mulching and cultivation the trees receive during the season of trial. Should there be a reasonable supply of moisture during the spring and early summer no appreciable difference would be likely to be observed. Large sized trees, whether planted in the fall or in the spring, will quite frequently go through the first season making a good, healthy, vigorous growth, and if June and July of the next season is unusually hot and dry, succumb to the withering influences of the season. This, however, is largely prevented by mulching or cultivation.

Small forest trees one, two and three year olds, usually, and so far as my experience goes, have always escaped this peril. I have sometimes thought the transplanting of large forest trees from the forest to the open prairie more hazardous in the fall than in the spring.

Sometimes facts prove it to be so, and then again facts prove it not to be so.

The fact is, you can't most always tell.

With a thorough preparation of the soil, and prompt, clean culture, your trees, if properly handled and planted, will, as a rule, outlive the fellow that plants them.

DISCUSSION.

Evergreens.

An inquiry was made as to why the roots of evergreens dry quicker than those of deciduous trees.

Mr. Hodges. I mulch my evergreens thoroughly.

Mr. Wilcox. I would suggest that the resin of evergreens becomes thick and thus the sap dries quicker than that of other trees.

Butternut.

Mr. Elliot. Butternuts must be planted where they are to grow,

Mr. Wilcox. I have transplanted them after growing two years.

Mr. Hart. I think the butternut is hardy if well-kept and cared for.

Mr. Elliot. I move that a vote of thanks be tendered to Mr. Hodges for his essay, and that a copy be requested for publication. The motion was seconded and carried.

Mr. Hodges. You may take the seeds of any forest tree however hardy and plant millions of them and the first winter you will lose nearly half; these being weakest; no tree will go through the first and second winters without loss. After this there is no trouble if they are taken care of. The butternut grows as far north as the Sauk valley. Planted here on prairie as many live as of any other tree. The black walnut is more tender and cannot be grown so far north as the butternut. Have planted seed from the Minnesota and the Zumbro valleys but without success.

Mr. Cook. I got a few butternut trees from Bryant of Illinois, but they did not live.

Mr. Hart. I believe the butternut is hardy and the losses are generally from carelessness.

Mr. Hodges. With Chestnuts I have had no personal experience. A friend in 1855 brought Chestnuts from Chatauqua County, N. Y. For several years they grew in summer and froze down in winter.

Then there was a period of mild winters and the trees grew and bore, but in 1872 and '73 they were killed root and branch.

Mr. Cotterell. I took some home and planted and a year later found them growing. They grew and died about as fast. I thought the tap root must be cut and I cut it in one row. These do not appear to kill down. I think I will cut the tap root of the remainder.

Mr. Harris. Houston County has Chestnut trees that have borne. I have trees; one transplanted young, the other not at all. They are doing well.

Horse Chestnuts.

Mr. Pearce. There has been one Horse Chestnut in Rochester for many years. It grows up in summer and kills down in winter.

REVISION OF APPLE LIST.

It was moved and seconded and the motion carried to take up the revision of the apple list.

Motion was made and seconded that the varieties of apples now recommended for general cultivation be continued.

Wealthy—Duchess.

Mr. Harris. We have not seen much of this variety on exhibition at our State Fairs. If the tree is as hardy and the fruit as good as is claimed why have we not seen and know more of it? It was put on the list for general cultivation in violation of the rule requiring trial and fruiting in different parts of the State.

Mr. Elliot. The first fruit was on exhibition here in 1869. Then the cions were sent to Illinois to be propagated and the trees sent back here, giving only eight years for their growth here—not sufficient time to show much fruit. On light soils the tree is not as hardy as the Duchess of Oldenburg, but on clay soils it is perfectly hardy.

Mr. Latham. The reason why it has not been exhibited more is that until within a few years Mr. Gideon has had all the bearing trees and he is not in accord with the Horticultural Society. The old tree is dead and was not winter killed. It bore after the hard winter of '72-3 but afterwards blighted and finally died. His younger trees are mostly on Crab stocks but some are not on Crabs and these look well. The tree is certainly hardy. Had never seen a tree winter killed or injured on the south side.

Mr. Wilcox. My first cion failed, but the next year they succeeded. My Wealthy trees have never blighted. Last year I had some apples from a tree four years from top working. Am very much pleased with the Wealthy.

Mr. Jordan. On Mr. Gideon's grounds no tree is exempt. Have had much blight, but when the Transcendent near by had to be destroyed the Wealthy was not injured. Have worked the Wealthy on the Transcendent and neglected to rub off the buds on the Transcendent stock. Branches from these buds blighted but the Wealthy cion on the same tree did not.

Mr. Latham. I do not emphasize the matter of blight but on Mr. Gideon's grounds the Wealthy blights worse than the Duchess. It has not blighted with me.

Mr. Jordan. Mr. Gideon works on Crab seedlings indiscriminately and such are very subject to blight.

S. P. Quincy, Olmsted Co. I got some cions and put on the Hyslop. The branches of the Hyslop blighted but the Wealthy cions did not until the Hyslop became affected. •

Mr. Phillips. I got 75 trees and the next winter came to see the fruit at the meeting of this Society. Was disappointed in this, but heard it highly recommended and so I got 75 trees more. Have never lost but one tree and that was by accident. More than this, *they have never failed to grow from the terminal bud* and this I consider this good evidence of hardiness. Mine are growing on white oak clay soil. Shall set 500 more in the spring.

Mr. Brand. I have opposed recommending the Wealthy for general cultivation for the same reason as Mr. Harris—insufficient trial, but I have planted more largely of it than of any other variety.

Mr. Pearce. Have not always been a particular friend of the Wealthy. I think it hardy, but disposed to blight. It is very hardy, a rapid grower and recovers from an injury sooner than any other variety. Have now more faith in it than in any other. It has come out all right every time.

Mr. Hart. I find it a slow grower and am afraid that we may not all have the genuine variety.

Mr. Harris. Have seen the Wealthy where I would not give anything for it, but elsewhere have seen it doing better.

Mr. Day. I have a tree 1½ inches in diameter which produced 57 apples in 1876.

The motion to recommend Wealthy and Duchess for general cultivation was carried unanimously.

Tetofsky.

Motion was made and seconded to recommend the Tetofsky, "for planting in limited quantities."

An amendment was offered and seconded to recommend "for general garden culture and orchard planting in limited quantities."

Mr. Brand. It is generally objected that the tree does not bear well, but it has not been planted here long enough to test its bearing qualities.

Mr. Harris. I know of trees planted 10 or 12 years that bear 2 or 3 bushels of fruit, but the fruit is not worth much. It does not keep.

Mr. Cotterell. It comes however when people bite sharp for fruit. I am pleased with the Tetofsky.

Mr. Pearce. We have one in this vicinity 12 to 14 years old that is a great bearer. They are slow growers but sure. I have two trees and would hate to take \$15 or \$20 each for them.

The amendment was lost and then the motion was carried unanimously.

White Astrachan.

Motion was made and seconded to place the White Astrachan on the same list.

Mr. Elliot. The fruit is like the Tetofsky—not seen for a long time.

Mr. Harris. It is a better desert apple. The tree is one of the handsomest that grows, and the hardiest also. A thousand bushels of the fruit could be sold in La Crosse. I have the trees in bearing.

Mr. Wilcox. I endorse what Mr. Harris says of the White Astrachan.

Dr. Twitchell. I have tried for four or five years to raise the trees and do not believe they can be successfully grown.

Mr. Jordon. I doubt if it can be grown outside of the protection of the river bluffs.

Mr. Wilcox. Mine are on the prairie and much exposed.

Mr. Brand. Mine grow steady and have not borne, but I think the tree hardy.

The motion to recommend "for planting in limited quantities" was lost; 2 for, 8 against.

Haas.

Motion was made and seconded to recommend the Haas for "general cultivation."

Mr. Hart You have not the Saxton. I have eaten it from my own grounds for thirteen years. The tree bears at five years and I have received \$7.00 for the fruit of a single tree in one year.

Mr. Sias. There is a difference in our location. I am high up on the prairie; Mr. Hart is on the Mississippi bottom.

Mr. Phillips. The Saxton is where it belongs—on the list recommended “for general cultivation in favorable localities.”

Mr. Brand. I view the Saxton from still higher ground than either Mr. Hart or Mr. Sias and it does well with me. Have over a hundred trees and am glad to have them. Several of them bore in 1876 and the fruit is good.

Mr. Kenney. I obtained ten trees. They are perfect and I have had some fruit from them. The trunks have been protected with crushed sorghum stalks.

Motion “to strike from the lists” was lost by a vote of 4 for and 9 against.

Motion was made and seconded to recommend “for favorable localities.”

Motion was made and seconded to amend by including the Haas. This was objected to by the mover of the motion.

Motion was made and seconded to adjourn to 7:30 P. M. Carried.

TUESDAY EVENING.

The Society was called to order by President Smith at 7:30. The revision of the apple list was continued.

St. Lawrence.

The St. Lawrence was allowed to remain recommended “for favorable localities.”

Motion was made and carried to add to the above heading the words “in southern portions of the state.”

WHITE ASTRACHAN AND ELGIN BEAUTY.

Allowed to stand recommended “for general trial throughout the state.”

Melinda—Stewart's Sweet.

Allowed to stand recommended “for trial.”

Mr. Wilcox. I move to amend by adding "if top worked on Crabs." Many varieties thus succeed when they would not if grafted on the apple. The Haas is one of them.

Mr. Latham. It is not safe to recommend the Haas "for general cultivation."

Mr. Jordon. It is not entirely hardy here.

Mr. Pearce. I have not decided whether to graft any Haas or not. The tree is a good grower but not hardy and is liable to injury.

The motion was lost, two for and ten against.

Plumb's Cider.

Motion was made and seconded to recommend Plumb's Cider 'for general cultivation."

Mr. Pearce. I do not believe there was one tree that was not killed or injured by the winter of '72-73.

Mr. Latham offered an amendment, which was seconded, to strike from the list recommenked "for general cultivation in favorable localities."

Mr. Brand. Better leave it there ; it does well on Mr. Gideon's place.

Mr. Latham. I would change my amendment to recommend "for favorable localities."

This was not objected to and Plumb's Cider was recommended "for favorable localities" by a unanimous vote.

Price's Sweet.

Motion was made and seconded to place with Plumb's Cider.

Motion carried by unanimous vote.

Mr. Kenney. I have thirty on transcendent stocks looking well, but on their own stocks they are not good.

Saxton.

Motion was made and seconded to strike the Saxton from the list.

Mr. Pearce. There is no question but the tree is hardy and no tree produces more fruit. It continues to bear even when diseased. The apples are very good. Better let it stand on list recommended "for general cultivation in favorable localities."

Mr. Sias. I have had it for 18 years and not a blossom yet.

Mr. Jordon. We don't want it to cumber the ground.

Walbridge.

Motion was made and seconded "to strike from the lists."

Motion lost by a vote of 2 for and 2 against.

Mr. Wilcox. I consider it top-worked one of the best.

Mr. Brand. Mr. J. S. Harris has some fine trees of it.

Mr. Elliot. Mr. Tuttle, of Wisconsin, says the old trees bear well but they do not bear young.

Peach Apple.

Mr. Jordon. This apple is worthy of some notice. I took it to the Centennial Exhibition. The trees have borne since the hard winter. The fruit does not keep well but is nice.

Mr. Brand. The tree is very hardy.

For trial by Amateurs and Pomologists.

Motion was made and seconded that varieties so recommended last year be allowed to remain.

Motion carried by unanimous vote.

The following are the varieties:

Alaska,	Julia,	Queen of Elgin,
Molly,	Clayson,	Kimball,
Rollins Pippin,	Rollins Russet,	Rollins Prolific,
Wabasha,	Hart's Seedling, No. 7,	Hart's Seedling, No. 11.
Viola,		

Clara.

Mr. Day. I have seedling which has borne for two years. The fruit of one year kept until June of the next year. The tree is ten or twelve years old and hardy.

Motion was made and seconded to recommend "for trial by amateurs and pomologists."

Motion carried by unanimous vote.

Mr. Sias. Would like to know what is the object of this list if amateurs and pomologists cannot get the stock with which to make the trial.

Mr. Hart. We must look to that question. Although my seedlings were recommended a year ago I have not been asked for any cions. I am ready to place them for trial in the hands of any responsible parties.

Mr Harris. I am ready to distribute cions of the Julia if the stock is not lost as I fear it may be from an accident to the tree.

Jefferson County.

Mr. Hart. I have an apple called Jefferson County. I think it a good one.

Mr. Wilcox. I got some cions of it from Mr. Hart and it has borne with me several years. Am much pleased with it.

Mr. Jordon. It has not succeeded with me.

PROFESSOR LACY'S PAPER.

Professor Lacy's paper on "Education for Farmers" was then presented. After the reading a vote of thanks was passed and a copy requested for publication.

The following is the paper in full :—

(Copy of the paper has not been furnished.—*Printer.*)

MR. HARRIS' REPORT.

The discussion on Game, Trespass and other Laws was passed over and the paper of J. S. Harris on the Horticultural Exhibit at the State Fair was called for.

After the reading it was moved to file for publication: The motion was seconded and carried. The following is the paper :

THE HORTICULTURAL EXHIBIT AT THE STATE FAIR OF 1877.

Mr, President and Gentlemen of Minnesota State Horticultural Society:

Our worthy Secretary has chosen me to furnish a report of the Horticultural exhibit at the State Fair. I assure you that I am not able to prepare such a report in time for this meeting. However I will endeavor to be ready with one before our transactions go into the hands of the printer. As a whole the last State Fair, held in Minneapolis, Sept. 3d to 8th, 1877, was very satisfactory. Financially it was a grand success, not only paying all expenses but furnishing a surplus sufficient to enable the Society to pay the whole indebtedness of the previous Fair of 1876. We should like to attribute the success to the unparalleled display of horses, cattle, sheep, swine, poultry, grains, vegetables, fruits, flowers and fine arts, but honor and justice forbid. A share of the credit must be given to the enterprising city, where it was held, to the remarkably fine weather which prevailed at the time and to the liberality of the visitors, for the exhibition was not remarkable for a State of our resources, where all the people are noted for *pluck and enterprise*. Several of the departments were not filled up to the standard of previous years, and more especially was it the case with the Horticultural department. The causes of this deficiency were mostly such as are

beyond our control. The fruit crop was almost a failure in all sections of the State. But very few of our apple trees bore even samples for the codling moth to deposit their eggs in and perpetuate their species, and the Siberians were not plenty and were not up to their usual standard of excellence. In many parts of the State drouth had prevailed and greatly injured the vegetables. Flowers and ornamental plants were shown in profusion, but the practiced eye of the professional gardener could see that the season had not been propitious for them.

Probably another draw back was the Agricultural Society was in bad odor with some of our best fruit growers, who were holding unpaid premium claims for the previous fairs, and who would not therefore help us out in the exhibition.

Having taken these adverse circumstances into consideration the State board expected but little and therefore allotted but little space for the show of fruits. However we were most happily surprised, for the exhibition far exceeded our expectations.

Apples.

The largest and most complete show of apples was made by I. H. Moulton, of East Minneapolis, about 125 plates, many of them of very fine appearance for so unfavorable a season. A marked feature of this exhibition was some fine samples of the Wealthy and a number of varieties of Russian origin, which he is propagating in his nurseries. J. S. Harris & Son, of La Crescent, Houston County, showed about 30 varieties of apples and 18 of Siberians. E. Ely, of Winona, showed 22 varieties from the orchard of Mrs. Campbell of Minnesota City, and a few Siberians. P. A. Jewell, of Lake City, 5 or 6 very choice plates of apples and 16 of Siberians. J. T. Grimes showed the best Transcendents on exhibition, but through an oversight of the committee was not awarded a first premium. Gould, of Excelsior, showed Duchess, Wealthy and Siberians. Brimhall, of St. Paul, showed Duchess and Siberians. Gould, of Beaver Dam, Wis., two plates of new varieties of Siberians, of very superior quality, and A. W. Sias, Rochester, sent in a basket of new Seedling Siberians of fine appearance. A. Stewart, of Litchfield, made a display of Minnesota peaches. Some others not mentioned above showed Duchess and Siberians. A marked feature of the exhibition was that the apples made a much better show than the Siberians notwithstanding the unfavorable season.

Grapes.

The exhibition of grapes was really superior to the apples. They were shown great profusion and of superior quality and were well ripened for so early in the season, showing that evidently the grape is at home on our soil.

The largest exhibitors were R. Knapheide of St. Paul, J. C. Kramer of La Crescent, F. G. Gould of Excelsior.

There were also some fine plates of Delaware and Concord by amateurs. In Mr. Kramer's collection was a white seedling of excellent quality which he claims to be perfectly hardy, and it appears to be worthy of trial.

The exhibit of Flower and Ornamental plants was fine and extensive but a much better effect could have been secured if more space had been allotted to them. The leading exhibitors were Wyman Elliot, J. C. Booth, and Geo. A. Brackett.

Owing to their crowded condition the judges found considerable difficulty in making just awards.

Garden Vegetables.

The competition in this department was spirited and the show large, but in general appearance the specimens did not give a fair example of what our gardeners can do in a favorable season.

The University of Minnesota had on exhibition a very large collection that were raised on the State Exp. Farm, which, to those who have a personal knowledge of the farm spoke volumes for the skill of the producer (for the soil of the farm is a poor bed of sand that had been entirely exhausted by cropping before it came into the possession of the University). Busch, Hollister & Co., Wyman Elliot, J. T. Grimes, and several others showed extensive collections. There were no huge squashes or mammoth cabbage to help out the show.

Premium List.

We have a premium list for the Horticultural department that compares favorably with that of any other state, but I think the time has arrived when it should be revised. A special premium should be made for apples of Russian origin to encourage their trial, and professional nurserymen ought not to be brought into competition with orchardists and farmers. A special premium should be given on the lists adopted by the Horticultural Society. I would suggest that a suitable committee be appointed by this society to revise the list before the next State Fair or that it be made the duty of the executive committee to do so.

JOHN S. HARRIS.

The society then adjourned to meet at nine o'clock Wednesday morning.

WEDNESDAY MORNING.

TREE PLANTING LAWS.

The society was called to order by President Smith at nine o'clock. The subject of Congressional tree-planting and other forestry laws was referred to a committee consisting of Messrs. Hodges, Brand and Elliot.

A communication from Dr. John A. Warder, of Ohio, requesting action on a memorial, asking the appointment of a commissioner to visit and report upon the forests of Europe, was read and referred to the same committee.

SUGAR AND SYRUP.

It was decided to take up the discussion of this subject. A number of questions were submitted by J. S. Kramer, Esq., of La Crescent, and were answered by Messrs. Miller and Kenney and others.

Best Variety.

The Secretary. What kind of seed gives the most profit in sugar and syrup?

Mr. Miller. The Minnesota Early Amber Sugar Cane is the best I ever tried. Its granulating property is much superior. Other kinds have not granulated with me. It ripens as surely as a crop of corn: I think I can feel more sure of a crop of this than of a crop of corn.

Mr. Kenney. My Amber Cane was two and a half inches high on the 9th of June, when the frost came; it cut every hill nearly to the ground. I let it alone and most every hill came up again. It made a good crop which was cut September 16. The last of it was worked October 9th. Lying so long was injurious, but four acres of Cane produced four hundred and twenty-eight gallons of syrup.

Mr. Miller. As to the earliness of the Early Amber, a man in Sheldon, Douglas county, planted the seed June 2nd, and the cane was ripe before frost.

Mr. Kenney. I began working the cane last year, August 28th, and took a sample of sugar, September 3d. It was a choice article.

Planting.—Harvesting.

The Secretary. What is the cheapest and best way to plant?

Mr. Miller. If you are planting but little, plant with a hoe in moist soil, about one inch deep. But for four or more acres get a planter. I used a Corn Planter, but it must be nicely adjusted. A planter plants as fast as four men and better because it puts the seed in moist soil. If the soil is clayey it must not be packed.

Mr. Kenney. It does not hurt the cane to freeze after one day's wilting, because then the cells do not burst by freezing. I prefer to let it lie on the ground till the leaves are cured; then the cane can be stored. Lay it on the ground in such a way that the tops and leaves will overlie and protect the stalks from the sun. It is important to cure the cane to get rid of the acid, especially in making sugar. I have always stripped the leaves from the cane for fodder, and believe the leaves paid me for the labor. I have got about two tons of fodder per acre.

Mr. Miller. I found from the Sorgho Journal, that it is unnecessary to strip the cane. I cut off the tops but do not strip. Would not give a man ten cents a day to strip. The cane handles better and the leaves protect it from the sun. They also assist in keeping off the dirt when it is beaten up by rain. Have not been troubled by broken and dried leaves with my mill, which is the Victor, made by the same firm as Cook's Evaporator.

Mr. Kenney. I use a mill made at Madison and will get another of the same kind. Used the Victor one season and then sold it.

Mr. Miller. Have used a mill with a choker but shall throw it aside. The leaves are better than Timothy hay, but the labor of stripping at that season is too great. The crushed stalks and leaves go into the yard to cattle, horses, sheep and hogs, which like them very much.

Mr. Kenney. I strip and cock the leaves to cure, and they can be stacked in a couple of weeks. Have had the fodder in February. I manage so that two men and a boy strip for 140 to 170 gallons per day.

The Secretary. What is the best time and depth to plant?

Mr. Miller. Plant as early as you can—before corn-planting—say the first week in May.

Mr. Kenney. It is advantageous to plant in succession. I planted 120 rods, June 1st, on new timber land, and obtained 118 gallons of syrup; this was stripped on the hill, cut and allowed to lie three days in the sun.

Mr. Miller. There is no danger of the seed rotting in the ground if it is planted early. It can be depended upon for a crop of seed. The seed can be fed to all domestic animals. It can be ground and fed to hens. It is extra feed for them. Hogs fatten on it and horses and cattle eat it. It gives from 20 to 25 bushels seed per acre.

Sprouting the Seed.

The Secretary. Is it advisable to start or sprout the seed before planting, and if so in what manner?

Mr. Miller. I have never been favorable to sprouting since I tried it. I planted the seed dry and with sprouts one-fourth of an inch long and could see no difference in the growth or results.

Mr. Kenney. I have also planted the seed sprouted and not sprouted and could see no difference.

Mr. Harris. I found thirty years ago that there was no advantage in sprouting seeds.

Mr. Elliot. My experience has been the same.

Soil.

The Secretary. What kind of soil is best, sandy or clayey?

Mr. Miller. Sandy soil has been regarded as the best for syrup, making it of a lighter color. Have tried it but was unable this year to make as good syrup as from clay soil. Would say that clay soil is better.

Mr. Kenney. Land that will produce from 40 to 50 bushels of corn will produce good cane.

Mr. Fox. I have found rich alluvial bottom land best for syrup, but for an article that will granulate I want the mullatto soil or yellowish clay.

Messrs. Kenney and Miller. Our soil is generally black prairie soil underlaid with clay, which sometimes plows up.

The Secretary. At what distance should it be planted and how many kernels in the hill?

Mr. Miller. I plant three and one-half feet apart each way and get the best yield by planting six to eight kernels to a hill.

Cultivation.

The Secretary. What is the best method of cultivating?

Mr. Kenney. I do the first cleaning with hoes, simply dressing out around the hills. I get the help to do this in time, whatever the cost. If the weeds once get ahead it is impossible to repair the injury. Next I go through lightly with a shovel plow and stir the ground often while the cane is young as in the cultivation of corn.

Mr. Miller (in answer to a question.) I should be afraid to harrow unless the ground was very level. Otherwise the hills might be covered by it.

Mr. Latham. A neighbor of mine has used a small light harrow and thus saved the first hoeing.

Time to Harvest.

The Secretary. How ripe should the cane be for best yield of syrup and sugar?

Mr. Kenney. Three years ago (1875) I made my first sugar from cane that was ripe, but there was not much of it; next year (1876) I had four acres which I let get dead ripe, and from this I could get no sugar. Two acres, however, were planted later, May 28th. This was cut up greener and granulated almost before the syrup was cold. It made about 600 pounds of sugar. The seed was not hardened when the cane was cut. This year (1877) I began August

28th to make up my product. I worked three lots directly from the hill, then a lot that lay a week. This had nearly all turned to sugar by the following Monday. Mr. Birdsell had 62 rods of cane that lay five days and made 62 gallons of syrup. In two or three days there was only two or three gallons of syrup to the barrel remaining. My best yield of sugar was from cane with the seed half ripe, cut five days before working. But this year Mr. Miller let the seed get ripe and got nearly as much sugar as I did.

Machinery.

The Secretary. What are the best machines and the best method of manufacturing syrup and sugar?

Mr. Miller. For sugar there is no evaporator equal to Cook's. I had four acres of cane about half ripe and six acres pretty ripe. The ripe cane granulated in the cooler so as to make twelve barrels of sugar. All ripe cane granulated very much the same. Have used no purifiers.

Mr. Wardell, of Iowa. From the Imphee variety of sorghum I have made little sugar, but a very fine quality of molasses. I used animal charcoal to remove the flavor.

Mr. Miller. The Victor Mill is made of different sizes. The largest size costs \$250.00, with down sweep to go with four-horse power. The next smaller size costs \$190.00. No. 4 Evaporator, 3 feet 9 inches by 9 feet costs \$50.00 at Cincinnati, and \$15.00 more for each addition in size. The larger sizes are 4 ft. wide and 1½ ft. longer per size.

Mr. Wardell. With too much pressure a detrimental substance appears in the sugar, and prevents making the best syrup.

Mr. Kenney. The Climax mill costs \$150.00 at the shop, with 10 per cent. off for cash. I think it the best that is made because it is self-adjustable. Have used a refining process but was disappointed in it and have ceased to use it.

Mr. Day. Have also given up the refining process because of the cost and trouble. I use a mill like Mr. Kenney's.

Yield per Acre.

The Secretary. What is the yield of sugar and syrup per acre? How many gallons of juice are required for a gallon of syrup, and what is the yield of sugar per gallon of syrup.

Mr. Day. Have had yields of from 47 to 250 gallons of syrup per acre. The Amber cane on good ground, well cultivated, will give an average of 100 gallons per acre.

Mr. Kenney. Three years ago I got seed of Mr. Miller and obtained 125 gallons per acre, but southern grown seed gave 150 gallons. The stalks of this grow larger. It is also later but still early enough to ripen.

Mr. Miller. Last year I got an average of 155 gallons per acre. This year I lost the account, but figuring on a small piece of cane, I got 160 gallons per acre.

Mr. Kenney. Since I got the seed from Missouri, I have obtained 160 gallons per acre. 8 to 9 gallons of juice make one gallon of syrup and one gallon of syrup yields from 5 to 7 pounds of sugar.

Cost of Production.

The Secretary. What is the cost of production, and what are the receipts from it?

Mr. Kenney. A man at Rice Lake made enough from three acres to pay for mill and pans and to supply his family with syrup. The cost of cultivation is a little more than that of a crop of corn. The cost of stripping and hauling is about \$8.50 per acre. Three boys and myself boil about 60 gallons per day (from daylight until dark) costing for labor about \$5.00 and for fuel about \$1.00. I have offers to grow, strip and deliver at my mill at \$25.00 per acre. One cord of basswood boils about 90 gallons of syrup.

Mr. Harris. I gather that it costs about 40 cents per gallon to get it into the barrel.

Selling Price.

Mr. Brand. It sells in Faribault for 80 to 90 cents a gallon and is sought after by many. It is without sorghum flavor. A gallon of syrup leaves a half gallon of syrup after the sugar is separated.

Mr. Kenney. I receive 75 cents per gallon by the barrel, 80 cents by the keg, and 90 cents for less quantities. Beginners sold at 50 cents, but the same parties now sell at 70 cents and the supply is exhausted. It is estimated that Rice county raised 15,000 gallons and it would require 60,000 to supply the demand.

Mr. Miller. Twenty-five cents a gallon is the common price for manufacturing at the mill.

Mr. Kenney. I got 35 cents a gallon for all I made for others. Paid \$3.00 a day to a man to boil. Two pounds seed per acre are required.

Mr. Miller. In draining the sugar I have had the best success with centrifugal force. I first got the seed from Mr. Stubbs, of Long Lake. He said the seed had been raised in this state about

five years, but did not tell where it came from. I thought that cane would degenerate, and sent some seed to St. Louis to be grown there. It had been grown in Missouri only two years when the short and early stalks became very few, while in Mr. Kenney's, grown from Minnesota seed, the short and early stalks were nearly one quarter of the whole.

Mr. Hollister. It seems strange that this variety should deteriorate in this State if it originated here. The circumstances favorable to its origin should also be favorable to its continued growth.

Mr. Miller. It mixes with broom corn all kinds of sorghum and with Durra, Pampus or Upland Rice.

History of Early Amber Cane.

NOTE.—Something concerning the history of this variety since the meeting adjourned has been obtained from Mr. Elliot. It is as follows:

DUNREITH, Ind., Feb. 20.

Wyman Elliot:

DEAR SIR—Your favor of February 12 is just at hand, and contents noted. The history of the Early Amber Cane, as I understand it, is this: Eighteen years ago this winter I went to Europe to select nursery stock, seeds, etc., to add to my collection at Richmond. While in Paris I bought of Vilmoir, Andrieux & Co., a few pounds of Chinese sugar cane seed, merely requesting the best kind they had. A part of this was given to a friend in this county, who was a skillful manufacturer of sorghum syrup, and by him planted. I requested this gentleman to note carefully whether this was different from and superior to kinds already grown here. In the plot so planted, embracing about one-fourth of an acre, there appeared one stalk of different habit from the rest during its growth, and that ripened its seed by the time the remainder was fully in bloom. The seed from this stalk was carefully saved, and planted the next season at some distance from any other cane, so as to prevent admixture. This crop ripened much earlier than any other cane had heretofore been known to do in the neighborhood, and when the cane was manufactured the syrup was found superior in taste, to any heretofore produced. On account of its earliness and the beautiful amber color of the syrup, I named it Early Amber. I do not believe the name was ever applied to any cane until I applied it to this. There is an apparent want in the chain of pedigree here that is easily explained. At the time the first crop of Early Amber was worked up here, a young man from North Carolina named Lindley was employed by the gentleman who grew and made up this lot, to assist in the sorghum works, and this workman seeing the value of the new kind of cane, saved and carried back to North Carolina a fine lot of Early Amber seed. From the product of this seed carried back to North Carolina, seed was again brought to Wayne county, Indiana, and introduced as early Carolina sorghum. It was seed of this, grown by Mr. Conley, of Wayne county, Ind., that I first advertised as Early Amber, though I knew of the origin of that

grown by my friend in this (Henry) county, but having my hands full of my own business, nursery and fruits, I did not give sufficient heed to the cane interest. I have, however, during the past few years traced the matter up, and am perfectly sure that what was received from Wayne county from North Carolina was the direct product of seed carried from here by Mr. Lindley. I have sold the Early Amber seed largely in the west and northwest during the last ten years, especially in Iowa and Minnesota. In the latter state I have frequent customers about Long Lake and Lake Howard as well as occasional orders from many other localities. One enthusiastic manufacturer in your state told me that he considered the introduction of Early Amber in his state as one of the most paying farm crops.

I have never given the attention to the subject of varieties of sorghum that I should, and do not certainly know whether the single seed found in the French seed was a "sport," and a new variety, or whether it was a seed of a well known sort, that accidentally got in with the kind intended to be given me, nor whether the variety now known as Early Amber is not known elsewhere under another name. I have only written what I do know about Early Amber, and regret my want of knowledge.

Respectfully yours,

E. Y. TEAS.

P. S.—If a satisfactory method of separating sugar from Early Amber syrup is developed and made public at your convention on the 27th, I should be glad to get into correspondence with those having the process in hand.

While the value of this industry is probably greater with you than with us who are nearer the eastern and southern markets, yet I am confident the sorghum interest will be recognized with us as of greater importance than it now is. Syrup is now worth forty to fifty cents per gallon, and much is sold here that is produced in Western Virginia and elsewhere. We should at least grow our own syrup, and sugar also. Hoping your convention may be a profitable occasion, I am,

Yours truly,

E. Y. TEAS.

CRAB AND SIBERIAN APPLES.

Motion was made and seconded to close the discussion on sugar and syrup and take up the revision of the list of Crab and Siberian Apples. Motion carried.

Motion was made and seconded to refer the list of Crab and Siberian Apples to a committee. After some little discussion the motion was lost.

Motion was made and seconded that the names of the lists be first fixed. Motion carried.

Motion was made and seconded that the first list be "recommended for general cultivation." Motion carried.

Motion was made and seconded to strike out names of lists adopted last year as follows: "Recommended for general trial," "Recommended for general trial in favorable localities," "Recommended for general trial in localities not subject to blight," and "Recommended for general planting by those not afraid of blight." Motion carried.

Motion was made and seconded to strike out the list "Passed over without action." Motion carried.

Motion was made and seconded that two lists of Crab and Siberian Apples be added, in the first of which should be placed those varieties "quite exempt from blight," and in the second those varieties "quite liable to blight."

The motion was carried.

Transcendent.

Motion was made and seconded to place Transcendent first on list recommended "for general cultivation."

Motion was carried, 9 for and 5 against.

Virginia.

Motion was made and seconded to place Virginia second on same list.

Mr. Smith. The fruit was the best in the St. Paul market last year. It is about the size of Transcendent, and the flavor good either for eating or for pies. The tree stands best of any in Mr. Brimhall's orchard.

Mr. Elliot. Mr. Chas. Hoag, of Richfield, got some of the trees from Illinois twelve years ago. I obtained a part of them. They are hardy and do not blight, but on sandy soil do not bear well.

Mr. Harris. The trees appear equally well with the Transcendent and the fruit is equally good and valuable.

Mr. Sias. I saw trees moderately loaded two years ago on Mr. Stewart's place. There was no blight on them, though Stewart's Sweet stood blighted all around them.

Mr. Hart. The Virginia is highly spoken of in Winona county. It is proved to be hardy.

Motion carried, 10 for and 2 against.

NOTE.—In a letter from F. G. Gould, of Excelsior, to the Secretary, dated Jan. 14th, 1878, occurs the following paragraph:

Hope a new and better name may be adopted for the Virginia Crab. I do not believe it originated in Virginia. The tree is said to be exceedingly hardy and nearly free from blight, fruit better than Transcendent and nearly as large. When it is better known there will be a demand for it for prairie planting, where most of the new crabs but partially succeed.

The society adjourned to meet at 1:30 P. M.

WEDNESDAY AFTERNOON.

CRAB AND SIBERIAN APPLES RESUMED.

The society was called to order by Pres. Smith, at 1:30.
The revision of the Crab Apple list was resumed.

Orange.

Motion was made and seconded to recommend "for general cultivation."

Motion carried by unanimous vote.

Early Strawberry.

Motion was made and seconded to place on same list.

Motion carried by unanimous vote.

Meador's Red Winter.

Motion was made and seconded to recommend "for general cultivation."

Mr. Harris. Mr. Jewell says it is one of the worst to blight and it grows too slow for firewood.

Mr. Brand. If I could have but one variety, I would take Meador's Red Winter. Have over 50 trees in bearing. The original tree did not blight to injure, and I have never had any blight on mine except on trees that I had pruned severely.

Mr. Mason. I know that Mr. Meador himself has but little confidence in it, and about Hesper, you cannot sell the variety at all.

Mr. Sias. Have had it in bearing for three years but do not think very favorably of it. It is not hardy enough.

Motion lost, 1 for and 5 against.

Power's Large Red.

Motion was made and seconded to recommend "for general cultivation."

Mr. Sias. I believe I was the first to introduce it in this State. I got it from S. B. Parsons, of Flushing, L. I. It is perfectly hardy as free from blight as any I know of and an enormous bearer. The fruit is a little smaller than Transcendent and about the same season as Transcendent.

Mr. Cotterell. I can confirm what Mr. Sias has said. There is no blight upon it. The fruit is sought after more than any other, and the tree has borne exceedingly each year.

Motion carried by unanimous vote.

Hyslop.

Motion was made and seconded to recommend the Hyslop "for general cultivation."

Motion was carried by unanimous vote.

Russell's Sweet Winter.

Mr. Day inquired concerning this variety.

Mr. Sias. The fruit is too small. Have seen the tree.

Mr. Day. A neighbor of mine has some answering its description. They have never blighted.

Mr. Wilcox. I got two trees three years ago. Both have blighted to the ground.

Minnesota.

Mr. Mason. What is the objection to this. It has never blighted.

Mr. Phillips. Does it ever bear?

Mr. Harris. I have trees large enough to bear three bushels, and they have not borne. (See "Minnesota" again.)

Conical.

Motion was made and seconded to recommend "for planting in limited quantities."

Motion carried, 8 for and 1 against.

Meader's Sweet Russet.

Motion was made and seconded to place on same list with Conical.

Mr. Brand. Have had several trees in bearing for several years. The tree never blights, is hardy and a fair bearer.

Mr. Miller. I have eaten the apples and they are nice; entirely without the crab taste.

Mr. Jordan. The tree is a shy bearer, little subject to blight. The fruit is very delicious, honey sweet.

Mr. Brand. The trees were planted in 1871, hence they have not stood long enough to determine whether prolific or not.

Motion lost, 2 for and 5 against.

Minnesota (again).

Motion was made and seconded to recommend "for planting in limited quantities."

Mr. Sias. I know the originator. He says the tree is a good or fair bearer. The fruit is large and of good quality. The season is early winter. The tree is hardy.

Motion was made and seconded to amend so as to recommend "for trial by amateurs and pomologists."

Mr. Pearce. Why recommend it at all? I have thrown it out. The amendment was carried by unanimous vote.

Motion was made and seconded to reconsider the list of Crabs recommended "for general cultivation." The motion was lost.

Balance of List.

Motion was made and seconded that the balance of the list be recommended "for trial by amateurs and pomologists." A substitute was offered that each variety be considered separately. The substitute was carried.

Beach's Sweet.

Motion was made and seconded that Beach's (Beecher's) Sweet be recommended "for general cultivation."

Motion carried, 5 for and 2 against.

Quaker Beauty.

Motion was made and seconded to strike out the Quaker Beauty entirely.

Mr. Sias. It is not sufficiently hardy—not adapted to our climate.

Mr. Mason. It is hardy at Hesper. It is rather a shy bearer but the fruit is nice.

Mr. Brand. Have had it growing several years on rich soil and much exposed. Nothing is hardier, but it has never borne.

Mr. Day. I got the Quaker Beauty several years ago and I have valued it highly. It is perfectly hardy. The fruit is nice—larger than Transcendent.

Mr. Dart. I have raised a few apples of this variety. The tree is not a good nursery tree because it grows scraggy. I have understood the tree to be a good bearer. The fruit is good.

Mr. Wilcox. I don't believe it is either good for the nurseryman or the fruit grower. I know it killed with me.

Mr. Cook. The tree is tender while young and a poor nursery tree

Mr. Jordon. Have had it standing six years in the nursery and it has borne no fruit. I see no value in it.

Motion was made and seconded to amend so as to recommend "for trial by amateurs and pomologists."

The amendment was carried, 10 for and 2 against.

Maiden's Blush.

Motion was made and seconded to recommend "for planting in limited quantities."

Mr. Harris. The tree is hardy and good.

Mr. Brand. The bark bursts and the tree does not bear very well. At any rate it bears late.

Mr. Dart. Many trees bear late and then bear well. This is a very satisfactory nursery tree.

Dr. Twitchell. In my nursery the tree is as good as the Wealthy. The trees bear late, but I have seen them as heavily loaded as the Transcendent. The trees are as hardy as any I ever raised. Mine are six or seven years old, but there are some in Chatfield nine or ten years old.

Mr. Wilcox. It is one of the best. The tree bears late but bears well.

Motion was made and seconded to amend so as to recommend "for general cultivation."

Mr. Latham. I don't think it is well enough known to recommend for general cultivation.

Mr. Jordon. I got two trees six years ago and they have not done satisfactorily.

Mr. ———. I have nice trees six or seven years old, but they have borne no fruit.

The amendment was lost, 4 for and 7 against.

The motion was carried unanimously.

Hesper Blush.

Motion was made and seconded to recommend "for general cultivation."

Motion was made and seconded to amend so as to recommend "for planting in limited quantities."

Dr. Twitchell. It is as hardy as the Maiden's Blush and equal to it.

Mr. Wilcox. It is one of the worst to blight.

Dr. Twitchell. The gentleman probably knows and speaks of the Hesper Rose in place of Hesper Blush.

Mr. Jordon. Saw trees of this variety in fine condition in Hennepin county several years ago, but last year I saw the same trees nearly dead.

Mr. Brand. The tree is particularly subject to the borer.
The amendment was carried unanimously.

Woodland Winter.

Motion was made and seconded to strike the Woodland Winter (Woodlawn Red) from the lists.

Mr. Sias. The old tree bears heavily. I have a few in the nursery and they are fine.

Mr. Jordon. The fruit is as good as the standard apple.

Motion was made and seconded to amend so as to recommend "for trial by amateurs and pomologists."

The amendment was carried, 6 for and 2 against.

Aiken's Striped Winter.

Motion was made and seconded to recommend "for trial by amateurs and pomologists."

Mr. Jordon. Have had it in bearing two or three years and it is not of any value.

Motion carried by unanimous vote.

General Grant.

Motion was made and seconded to strike from the lists.

Mr. Cotterell. We have men here who have had it without blight.

Mr. Phillips. I had ten trees struck off by blight.

Dr. Twitchell. It blights no more than the Transcendent. The fruit is larger than Transcendent and as good as the Duchess.

Mr. Dart. It ought to go ahead of the Transcendent, Would like to have it recommended "for planting in limited quantities."

Mr. Hatfield. I got some trees and they have done well.

Mr. Day. The tree is as hardy as the Transcendent and blights no more. The apples are large unless too many are allowed to grow.

Mr. Wilcox. What has been said in its favor is my experience.

Motion made and seconded to amend so as to recommend "for general cultivation."

The amendment was carried by unanimous vote. (See "Gen. Grant" again.)

Whitney's No: 20—Alaska—Brier's Sweet.

Recommended "for trial by amateurs and pomologists" by unanimous votes.

Hutchinson's Sweet.

Recommended "for trial by amateurs and pomologists", 6 for and 1 against.

Aiken's Green Winter.

Motion was made and seconded to recommend "for trial by amateurs and pomologists."

Motion lost, 2 for and 4 against.

Power's Large Red (again.)

Mr. —. The tree is as hardy as any tree in Minnesota, and the fruit is very fine.

Mr. Sias. The fruit sold readily for two dollars per bushel.

Motion was made and seconded to reconsider the action on Power's Large Red.

Motion was made and seconded to lay the Crab Apple subject on the table.

This motion was carried.

MR. MENDENAALL'S PAPER.

Mr. Mendenhall's paper was called for and read by the secretary, after which a vote of thanks was tendered and the paper ordered on file for publication.

The paper way as follows:

THE CABBAGE BUTTERFLIES.

In this northern clime, where fruit is comparatively scarce and difficult to grow, great store is naturally set by the vegetable garden, which our intense though brief summers develop in remarkable perfection.

Among our most important garden crops is the cabbage. This delicious and healthful esculent thrives greatly in our quick, rich soil, and is noted for a solidity of structure and delicacy of flavor not excelled, if even attained to, in any other part of the world. These qualities render it one of our most marketable products and a source of no small profit to the producer.

The only impediment to the successful cultivation of the cabbage plant is the occasional prevalence of certain "worms" and other insects, which gnaw and erode the leaves, and in this way interfere with the compactness and vigor of its growth. Among the most injurious of these insects are the larvæ of two or three butterflies, distinguished as the "Cabbage Butterflies," or "Garden Whites." These butterflies are familiar to every one as they flit lazily from flower to flower sipping nectar, or hover in flocks over the cabbage or cauliflower beds intent on the more serious business of placing their eggs where their young can find sustenance. We have in this country two native and one imported species. The first of these, and the one which at present has the widest range, has been named the Southern Cabbage Butterfly (*Pieris protodice*, Boisd.) The popular name is clearly a misnomer, as it was bestowed upon it by Prof. Riley under the erroneous impression that it occurred in destructive numbers only in the South and Southwest.

This is our darkest species of *Pieris*, the body being black and both upper and under wings of the female being quite regularly checkered in gray, black and white. The sexes differ more in color in this than in any other of the species; the wings of the male being creamy white, with but five more or less distinct black spots on the outer half of the upper pair, while the under pair are plain white. The insect hibernates in the chrysalis state in some protected situation. The butterflies of the first brood make their appearance in May, and deposit their greenish-white, sub-conical eggs singly on the young cabbages and turnips, as well as on some wild cruciform plants, such as mustard, pepper-grass, (*Lepidium*) and cress (*Arabis*). The young larva is of a dull orange color, with a black head, but shows the characteristic lines and black dots immediately after the first molt. When full grown it measures about one and one-eighth inches, and is nearly cylindrical in form. The ground color is greenish blue, with four narrow longitudinal yellow stripes and a broad band of lilac along each side. The surface is roughened with numerous minute black spots from which proceed short, stiff hairs. It feeds for about three weeks, during which it molts four times. The chrysalis is attached by the tail and supported in an upright position by a band of silk around the middle, like those of the typical *Papilios*, which it likewise closely resembles in form. It is of a bluish-gray color dotted with black. The butterflies from the first brood emerge from their chrysalides in from eight to ten days, and immediately proceed to place their eggs upon the now well-grown cabbages. The first brood is seldom numerous enough to do much damage, but the fall brood, being under favorable conditions very abundant, has destructive powers proportionately great, and often causes considerable loss in large fields.

The only other species we have with us as yet, is the Potherb Butterfly (*Pieris oleraceæ*, Boisd.) This is a peculiarly northern species, being rarely found as far south as Pennsylvania in the East, and probably not much below the southern boundary of our own state in the West, while it extends northward as far as Great Slave Lake, and possibly beyond. The butterfly has a black body covered with soft white hairs, and the wings are of an unspotted creamy white color slightly shaded with gray at the base and on the front edges, especially on the under surface. It lays its eggs usually three or four together, on the under sides of the leaves. The eggs are of a yellowish color, somewhat pear-shaped, and furrowed with longitudinal ribs. The larva is a velvety, dark green cylindrical worm, without spot or stripe. It changes to a pale green or whitish chrysalis ornamented with minute black dots. There are two broods of worms during the

season, the second brood, like that of *protodice*, being the most destructive. The development of this insect is somewhat irregular, and it may usually be found in all its stages during the months of July and August and the early part of September. The larvæ of both these native species feed preferably upon cabbage, but also devour with apparent relish the leaves of turnip, cauliflower and kohlrabi, and are occasionally found upon radishes, cress, pepper-grass, mustard and several wild plants of the same family (*Cruciferae*).

The first named species feeds indiscriminately on the upper and under sides of the leaves, and is easily detected by its dark and variegated coloring. The second species, on the contrary, conceals itself on the under side of the outer leaves, with which its green color so closely blends that it requires careful search to discover it.

Destructive as these indigenous butterfly larvæ sometimes prove, their depredations are trifling in comparison with those of the imported Rape Butterfly (*Pieris rapæ*, Schrank). This insect has long been known throughout Europe as one of the most serious pests of the vegetable garden. It was introduced into this country about twenty years ago, and has since spread over almost the entire Dominion of Canada, and established itself throughout the northern and middle Atlantic states. It was first recognized in the vicinity of Quebec, to which port it was doubtless unconsciously brought and cast ashore in the egg or chrysalis state, with the refuse from some vessel; or perhaps the butterflies from chrysalides suspended during the voyage, escaped while the vessel was at the dock, and fluttered landward to perpetuate their kind on new soil. As with most imported insects, the change of climate seemed to impart new vigor to this pest, and as its European parasites had not followed it across the ocean, and our native species had not then adapted themselves to the immigrant, it multiplied for the first ten years with exceeding rapidity, and in 1870 was estimated to have destroyed, in the neighborhood of Quebec alone, more than \$240,000 worth of cabbages. Its ravages were equally severe for some years in the market gardens around Boston, New York, Philadelphia and other eastern cities, where the unconscious gardener would walk amid a snow storm of white butterflies, bemoaning his ragged and wilted rows of cabbages and cauliflower, without dreaming of associating the innocent looking flutterers around his head with the work of devastation going on at his feet. To illustrate how little general knowledge there is upon the subject of the transformation of insects, it is said that a certain entomologist while attempting to capture some of the butterflies from one of these suburban gardens, was driven out with much abuse by the irate gardener, for beating down the plants with his net. In vain the gentleman attempted to explain the service he was rendering in the capture of the butterflies. He was listened to with absolute incredulity. The gardener could never be made to believe—not he—"that catching white butterflies in a bag would save cabbages from worms"!

As this destructive insect is slowly but surely advancing westward, it is well for us to make ourselves acquainted with its characteristics in order that we may recognize it upon its first appearance, and yield it "no quarter."

The two sexes of the imported butterfly are much alike, and bear a casual resemblance to the male of the so-called Southern Cabbage Butterfly. The body and the tips of the front wings are black. The female has two conspicuous black spots near the outer edges of each of the front wings, while the hind wings are marked with a large spot on the upper edge and a smaller one near the middle. The male has a single black spot on each of the front wings and an indistinct one on the upper edge of each of the hind wings. The larva is of a deep green

color, covered with a dense, velvety pubescence, and ornamented with three longitudinal yellow stripes. It does not, as in the case of our native species, confine its depredations principally to the outer leaves, but has the habit of boring into the heart of the plant, and defiling it through and through with its gnawings and excretions. In localities where this worm is naturalized, no cabbage can be committed to the pot without first being picked to pieces and each leaf carefully looked over to detect worms that may be lurking in its folds.

The increase of this insect has been materially checked during the past seven or eight years, by the attacks of two parasites. The first of these, a minute Chalcid, was originally supposed to be its European enemy, which had by some fortunate accident been introduced into this country in infested larvæ or chrysalides, but later investigations render it more probable that the parasite is a native of this country, as well as of Europe, and that it probably preys upon our native species in the absence of the imported one. It is a very small, metallic green, four-winged fly, and bears the scientific name, *Pteromalus puparum*, Linn. This fly punctures the skin, and lays its eggs on all parts of the worm, and the tiny maggots, often to the number of forty or fifty, feed upon the fatty tissues near the surface, so that the larva, though weakened, is not vitally injured by their presence, and is able to change to chrysalis. The parasites then work deeper, and soon destroy the life of their victim; and in the course of ten or twelve days the flies begin to emerge.

The second parasite is a *Tachina* fly, a two winged insect about the size of the common house fly, which it closely resembles in general appearance. This insect has also proved a valuable ally of the gardener in reducing the numbers of the cabbage worms.

Various applications have been experimented with in destroying the worms, but for the most part those that were efficacious against them, such as carbolic powder, white hellebore, and Paris green, at the same time rendered the plants upon which they were used unfit for food. Dusting with lime and wood ashes, and drenching with hot water, have been tried with considerable success. The best measures, however, are *preventive* and consist in trapping the chrysalides under pieces of board placed here and there among the plants, and elevated an inch or two from the ground by means of clods or stones under each end. When ready to change the worms will eagerly avail themselves of such shelter, and the boards should be examined every week or ten days during the season, and the chrysalides removed and destroyed, with the exception of those that are parasitized, which may be known by their dark livid color. Another preventive is to catch the butterflies, which always fly low and slowly, in a butterfly net. The latter is a bag two or three feet in length, made of coarse book muslin or mosquito netting, the open end being secured around a hoop of thick wire, having the ends twisted together and soldered into a narrow tin tube to form a handle, which can be lengthened at pleasure by fitting into it a stick or cane. The butterflies can be caught on the wing or as they alight, by throwing the net over them and giving it a dextrous twirl to secure them, after which a slight pinch between the thumb and finger puts an end to their power for injury forever.

The cabbage plant is liable to the attacks of a large number of other insects, but none of these have proved formidable pests with us, although further south the damage done by some of them renders the cultivation of cabbage very unsatisfactory and unremunerative.

At the conclusion of the reading of this paper, Mr. Pearce called attention to the apparatus for the destruction of nocturnal insects, in the report of the Department of Agriculture.

MR. HARRIS' REPORT ON INJURIOUS INSECTS.

The report of Mr. Harris on Injurious Insects was then called for and read by the writer, after which a vote of thanks was tendered and a copy requested for publication.

Mr. President and Gentlemen:

One of the greatest aids that could be given to the farmers and horticulturists of this State by the present legislature would be a practical entomologist, whose duty it should be to inquire into the minutest details of the lives and habits of insects both beneficial and destructive, and cause to be published frequent reports of his investigations, that the people may be able to recognize their friends and and exactly when, where and how they may combat their enemies to the best advantage. It is evident that insects destroy or seriously injure one-fourth of the products of this State, and that they are alarmingly on the increase. (One thousand dollars expended in furnishing the necessary information would return a hundred fold to the people.) It is of the utmost importance that the tillers of the soil should be informed of the best means for heading them off. Books and papers treating upon the subject of entomology are scarce and difficult to obtain, and what little is written and published in our agricultural papers is so over-shadowed by other subjects that it is not half as beneficial as practical reports devoted exclusively to the subject, consequently the most of our people are ignorant of the habits, instincts and various transformations of insects, and are unwittingly giving aid and encouragement to their enemies by furnishing them the best facility for their increase.

If they knew that the weeds and wild plants that luxuriate in the angles of rail fences were a particularly favorable place for protection during their transformations, that decaying logs and stumps are the very best nurseries for them, and that danger lurked in everything that marred the beauty of their places, self-interest would prompt them to clear out the fence angles, grub and burn the stumps and clear up and destroy everything that is useless but to present hiding places or inducement for insects to take up their winter quarters in or to deposit their eggs for the coming season, and the farms and gardens of our State would present an appearance of neatness and thrift.

The insects that were most injurious to the horticulturist in the year 1877 are the chinch bug, the May beetle and its larva, the white grub, cut-worm, cabbage worms of two species, canker worm and steel blue grape bud borer (*and bed bugs.*)

Chinch Bug.

Early in the season the chinch bug (*Micropus leucopus*) made its appearance in Houston county. They were massed about the base of strawberry plants, young beets, cabbage, etc., and for two or three days I observed them very numerous on the green fruit of the raspberry. At the beginning of the straw-

berry season they suddenly disappeared from the fruit and vegetable plants, and commenced marching in herds through some of the wheat fields, sweeping everything before them. The full grown insect is about one-twelfth of an inch in length, and of a black color with white wings. When crushed they emit a very unpleasant odor. It is said that multitudes of them live through the winter concealed under chips, stones and various kinds of rubbish, and that the females deposit their eggs in the ground in the month of June to the number of 300, and that the first brood of young mature from first of July to middle of August, and that dry seasons are much the most favorable for them. I discovered the first about the 20th of April, (about a pint or more) under a board that had lain through the winter by the side of my raspberry bed.

Remedy.—Farmers sometimes save their crops by plowing a deep furrow along the side of their fields, which the insects are entering, and then hitching a horse to a log and drawing it back and forth in the furrow, which crushes them as they fall into it, and are unable to crawl out over the loose dirt of the sides. Salt is said to be a remedy. Few if any birds prey upon them.

May Beetle.

In the month of June the May Beetle (*Phyllophaga Quercina*, Harris) came out of the earth in great numbers and devastated the foliage of the fruit and forest trees to a considerable extent. At night they swarmed in such numbers as to present the sound of bees swarming. Their larva, the large white grub, is very destructive to flower and garden plants, also to strawberry plants and young trees. As they work entirely under ground, they are not discovered until the mischief is done. I have found as many as eight under a single hill of strawberries, and lost three-fourths of the crop of cabbage on a half acre. They continue to work on through the entire summer. Whenever a plant is discovered wilting it should be immediately dug out and the grubs destroyed, or they will move on to the next plant. Ducks and other poultry are useful in destroying the beetle. The Butcher bird has a particular appetite for the grubs, and will destroy great numbers of them when turned to the surface in plowing. I think that multitudes of the beetle might be trapped at night in kettles or tubs of water with lighted lanterns suspended over them.

Cut Worms.

Cut worms (for description of them I refer you to an essay by Mr. Mendenhall, read at Market Hall, Minneapolis, Dec. 22, 1877) were numerous and very destructive to cabbage and tomato plants, young Lima beans, cucumbers, melons, &c. One good preventative against them is to keep the ground clear of weeds. The moth, or perfect insect, is led by instinct to seek out the foulest or weediest places to deposit her eggs, to be sure of provender for her progeny; hence the slovenly gardener suffers the most from their ravages.

Grape Bud Borer.

The steel blue grape bud borer is a short beetle about one-tenth of an inch long. They made their appearance about the time the buds commenced swelling, and the damage they do is by boring into the heart of the bud, thus destroying its vitality. I did not make their acquaintance until they had about finished

up their work, and am not familiar with their habits or history. As, like the Colorado potato beetle they have a habit of feigning dead and falling to the ground when disturbed, I think they might be caught in nets by holding them under the vine and giving a sudden jar to it. At one time in the summer I discovered the leaves of some Concord grapes infested with a dark caterpillar about one-third of an inch long, which was eating the leaves full of holes. Before I could take time to secure some of them in order to watch their transformation before they had entirely disappeared. Probably they were the larvæ of the beetle.

I do not know that bed bugs are injurious to the horticulturist, only as they keep hired hands from getting sufficient rest at night, and consequently they take more in daytime.

Cabbage Worms.

A green and yellow striped caterpillar about $1\frac{1}{2}$ inches in length when fully grown, has been very destructive to cabbage, eating the leaves away and even into the hearts, causing premature decay. I have not had time to study them up, but think they are the larva of a yellowish white butterfly (*Pieris rapææ*, or *P. oleracea*) that is seen hovering about the garden in considerable numbers. There appeared to be several broods of them during the summer. Sprinkling the cabbage with a moderately strong brine would probably be beneficial. Thousands can be destroyed when they are small, before they have wandered from the leaf upon which they have hatched. A few minutes spent daily in looking for and destroying them will prevent their doing any serious damage.

Considerable damage was done to the cabbage in the fall by another insect that eats holes in the leaves, riddling them like a sieve. The caterpillar is little more than one half inch long, of a greenish color, and thickened in the middle. Dr. Fitch has described it in N. Y. Report of 1853 Page 874, as the Cabbage Moth (*Cerostoma brassicella*.) When disturbed, the caterpillar drops from the plant to suspend itself by means of a silken thread. The pupa is formed in a silk-like cocoon woven upon the leaves, and as it is but a few days before the perfect insect emerges, probably more than one brood is hatched out in a year. I noticed them quite numerous last fall in the garden of Mr. L. Chase of Minneapolis. I think salt water would be a good remedy. My patch was entirely cleared of them by a flock of blackbirds, but they scratched the cabbage to pieces considerably in getting at them.

JOHN L. HARRIS.

MR. HOLLISTER'S PAPER.

Mr. Hollister's paper was then called for, and read by the writer. After the reading, a vote of thanks was tendered and a copy requested for publication. The following is the paper.

GROWING SEEDS FOR MARKET.

It is not intended by this paper to convey the impression that seed growing is an easy and sure horticultural horse to ride to sudden competence. Neither is it intended to show that any one can succeed in the business, any more than an essay detailing the workings of any commercial enterprise would guarantee business success to any person undertaking it.

The great question with any productive industry is that of supply and demand. The minor problem is, if there is an evident demand, how to profitably reach the market. Common commodities of horticultural birth—grains, fruits and flowers, have simply to be placed on the open market, when they immediately find a price. Their merit is easily discernible by appearance and condition. Not so with garden seeds. Their appearance is not their guarantee. Seed time and harvest—the work of a year, only tells their story. Bound up in the shell of a little seed, that the most practiced eye cannot distinguish with certainty whether it be Swedish Turnip or Flat Dutch Cabbage, lies the hidden germ that tells of success or failure. All sorts of radish seed look alike, as also tomato, turnip, lettuce, &c.

In buying fruits you can judge for yourself. In buying seeds you are at the mercy of the seller, for he must judge for you; and that is where the trouble comes from when you attempt to find a market for garden seeds of your own growth. You must first convince your customer that you are yourself reliable, then you may begin to quote prices, and not before.

A beginner in the business might grow a full list of sorts, true to name, and as good as could be produced anywhere; he might fill his satchel with samples, and tramp from St. Paul to Boston, visiting every seedsman on the route, and not sell a dollar's worth. On the other hand, a grower with a reputation for growing good stock, need never leave his premises to effect a sale, but will be pushed to the full capacity of his farm to supply the demand.

Understand me; that when seedsmen speak of a grower, they have reference to the man who grows seeds to sell in bulk to dealers, a man who issues no catalogue, does no advertising, but depends upon others to sell his stock for him; and this class are very numerous, and occupy a very important place in the seed trade. There are but few dealers in this country who are also growers. Most of them who make big claims, only grow a few varieties, and sort up from the general growers. For instance, a seedsman in Illinois or Michigan may grow to good advantage the vine seeds, but the weevil infests his peas so that he must send to Minnesota or Canada for them. He can grow sweet corn to perfection in Illinois, but if his gardeners want a really early sort it must be grown somewhere north of his location. He can grow tomato seed, but must go to Staten Island for his cabbage seed. He can grow parsnip, but must go to New York for carrot. He can grow onions, but must go to Connecticut for his seed. And thus the interchange is made: we buy of the East, the East buys of us. We import radish, cauliflower, celery, spinach, and Swede turnip from Europe, and in turn sell them squash, cucumber, tomato, cabbage, carrot and onion.

The general grower must supply the most of this exchange stock, which certainly opens a wide field for intelligent industry. While we may to a certain extent point out how many sorts may be grown, we do not advise that a general list be attempted. Better grow pumpkins carefully, and get a reputation for No. 1 pumpkin seed than to attempt a long list of fancy sorts and expect to get your money back before you establish a reputation. Grow no large quantity of seed of any kind until you know where you are going to sell it, and at what price, unless you have a good deal of money to spend for advertising, and are willing to take your chances in creating a market.

While this advice may seem to discourage it also encourages. It discourages careless attempts; it encourages the careful, pains-taking, scientific grower. One is sure of failure; the other is sure of success. And both meet their just reward.

If any man should be rewarded for his labor it is the tiller of the soil; and if any man deserves to go empty handed and unrewarded, it is he who places spurious seeds in the furrow of the husbandman. The grower and dealer in seeds has then a critical and sacred duty. The burial and the resurrection of the seed they sell will proclaim how well they keep their trust.

Soil and Preparation.

Seed growing is also vegetable growing, for the same operations are necessary to grow the stock from which the seed is to be produced as is pursued in market gardening operations. It is highly important then that the ground be in the best possible tilth.

A sandy loam, or warm light soil, brought up to the required standard strength by the application of fertilizers, is the best condition of soil we have any knowledge of for growing vegetables, and as far as our experience goes, is of the sort to produce the plumpest, brightest and best developed seed. We find a strong clay soil too cold and slow, and that a deep black loam has a tendency to induce too rampant growth of vine or stalk, which is quite apt to be at the expense of the quality of seed. Let us suppose then, that the soil is in the right condition, plowed in the fall and again in the spring, thoroughly pulverized with harrow and roller, laid out in straight rows, so as to be sightly in appearance and easy to work, and we will begin by

The Selection of Seed Stock and Stock Seed.

In seed-growing parlance, the roots of all biennials that are planted for seed crop are called seed stock, while the seed of annuals planted for the same purpose is called stock seed.

In selecting roots, like beets, carrots, &c., care should be taken to use only those perfect specimens that preserve most radically the form, color and foliage of the variety sought to perpetuate. And this can partially be done in the field at harvesting time, by first rejecting all that showed foliage of the wrong color or shape. Then again rejecting unshapely and off-colored roots, you can arrive at nearly a perfect seed stock. In annuals the selection is easier as the plant, seed and fruit tells the story, unless there has been admixture by too close planting; in which case the damage is irreparable. In selecting these stocks the greatest care must be observed, and it is a work that should never be entrusted to inexperienced persons. It is one of the secrets of success, and the most important branch of the business.

I have been assigned a subject that would require, to do it justice, more space than you would be willing to allow me. I can therefore only glance at the list, and give here and there a practical hint that may be of value to some one, even though they may wish to grow *only* for their own use.

Beets.

One of the most difficult seeds to procure to suit the fancy of a critical planter. It has a great tendency to sport, and only by strict selection of seed stock and complete isolation of the growing seed crop can any thing like satisfactory results be obtained. In harvesting the seed stock in the fall, the crown should not be

cut close. Winter as you please, in cellar or in pits. Plant as soon as danger of frost is over, in rows three feet apart and eighteen inches apart in the row, and cover to the crown. Soil should be rich. Cultivate thoroughly, and hill up well at the last hoeing, to support the stalks. Cut as soon as the seeds turn brown. Dry in the sun, and thresh with a flail, but take care to do this before the stalks become so dry as to break badly, as it is then almost impossible to separate the short bits of sticks from the seed. Clean with a fanning mill, and spread out in a dry loft to cure before sacking; and here is a good time to remark that all seeds keep better in sacks than in barrels or bins. Good six years.

Beans.

This aristocratic plant will well repay for planting on moderately rich soil, notwithstanding its reputation for thriving on gravelly knolls. Plant at late corn-planting time, in rows running north and south, thirty inches apart, one bushel of seed per acre. Cultivate well; hill but little, as the pods should stand well up from the ground. Never hoe or cultivate when the vines are wet. Harvest as soon as ripe. Stack in hard stacks around a pole with plenty of brush at bottom, and cover with hay; and let them remain in this position until thoroughly dry and cured out. If dried for only a day or two on the ground, they will thresh well, but are not cured out sufficiently to sack with safety. They are apt to heat, which will ruin them for seed and also take on a dingy appearance, while if cured in the pod they preserve the bright glossy appearance so valuable in seed stock. Thresh with a flail, and compel your men to wear rubber shoes while at work, as heavy boots are sure to split a great many beans. Clean with a fanning mill, and sift with a No. 8 seive, and hand pick.

Cabbage.

This vegetable responds liberally to careful selection of seed stocks, and fails just as liberally in proportion as poor specimens are planted for seed. Old established specimens preserve their individuality remarkably well, but the new introductions are apt for years to persistently sport, as having an ambition to be every thing at once. This is familiarly illustrated in that new candidate for public favor, Henderson's Summer, which in our grounds seems yet to be undecided whether to be a Jersey Wakefield, Early Wyman, or Fottler's Brunswick; and for the interest of the seed trade, I hope it will soon settle down to business, and establish for itself a pedigree. Winter according to your most approved notions, taking care that the roots are preserved tolerably fresh, and that the stalk at its junction with the head is preserved from alternate freezing and thawing, as that is a vital point, and if injured is sure to rot off when planted out. Plant 4x4 ft. deeply, so the head nearly rests upon the ground. Harvest as soon as the pods turn yellow, as there is danger of loss by shelling, and the seed loses its plump appearance if allowed to get too ripe. It ripens irregularly, and several cuttings must be made to insure an even sample of seed. Much of the cabbage seed sold has the appearance of having two or three sorts mixed, owing to the carelessness of the grower in harvesting the whole stalk at one time, containing seed in every stage of ripening. Dry upon cloths in the sun to dry, and remove to the threshing floor by tying the corners of the sheets together. Thresh with a very light flail; clean with fanning mill, and finish with No. 18 seive.

For seed stock winter cabbage should be planted at the usual time. Early sorts must be planted so as to mature late in the fall.

Borecole, Brussels Sprouts, Broccoli and Cauliflower, owing to our hot, dry summers, are not profitably grown here, but are brought mainly from Germany.

Carrot.

American grown carrot seed is far better than the European. The European is fifty per cent cheaper—which accounts for the difference of price—in catalogues of dealers. Those determined to present the best stock of American seed, are compelled to sell at a higher price than their competitors who sell imported seed; and this is also true of American beet and cabbage—both superior, but owing to the high comparative price of labor both must be sold at a higher price.

Select the best roots, plant in April on rich ground, one foot by four. The seed ripens unevenly and must be gathered at different times and spread on a floor under cover to dry. Thresh; rake the stems off, sift through a No. 8 seive and continue sifting and rubbing the seed through smaller meshes until you finally finish with fanning mill and No. 24 seive.

Celery.

Seed stock celery is preserved in the same manner as for winter and spring sales. being sure to preserve those with solid stems and perfect heart. Plant early in spring four feet by two. When a majority of the seed is of a brown color cut the whole stalk. Dry in the sun about one or two hours and thresh lightly, and clean this first threshing by itself with No. 24 seive.

Lay the stalks away for two days to dry more thoroughly and thresh again. This second threshing is usually sold as soup celery.

Sweet Corn,

owing to its tendency to mixture, requires as much care as any seed crop. Nothing but radical and complete isolation will insure purity of stock. In the management of our own seed farms I insist on at least forty rods intervening between sorts.

Plant stock seed, selected with reference to color of seed, color of cob, number of rows, and size of the ears of the sort you wish to perpetuate. No grain or vegetable will respond more readily to care in this respect unless it is the tomato. In the climate of Minnesota the soil must be *rich* and *light* to insure a profitable crop of seed corn of any variety.

Plant in check rows three and a half feet each way, four kernels to the hill. Cultivate and use the hoe often. Our plan of harvesting, though expensive, is a sure one.

When almost ripe we drive through the field and gather all the ears in a wagon. They are taken to the drying house, partially husked and the ears trained up in bunches of about twenty ears each and hung on nails overhead, and on bars across the room until they are filled.

In husking the poor ears are thrown out as stock food, and the good ears that are broken off so that they cannot be hung up are placed upon lath shutters, and the whole immediately dried with fire heat. No shelling is done by us until wanted for spring sales, as we have found by experience that sweet corn rapidly

loses its germinating properties if shelled and sacked much in advance of the season for planting. Stock seed should be selected while husking, as you can then more readily detect the earliest and best ears.

Cress, Endive, Kohl Rabi and Leek are mainly grown in Europe.

Lettuce is not a satisfactory crop in this country, and much of the seed used here is grown in England.

Cucumbers, Melons and Squashes

are handled so nearly alike that one description will suffice for all; supposing, of course, that having good stock seed, you know how to grow the crop. Complete isolation is demanded for all the sorts, and it is more imperative with the squash family than any of the other vines.

The crop being grown, we first go over the field and select and haul away the most perfect specimens for stock seed, to be used in growing a seed crop the next year. When the crop is thoroughly ripe, they are either hauled to a convenient place or cut open and the seed taken out in the field. With melons and cucumbers the latter plan is pursued, as they break badly in handling. Prepare tables to work on in cutting and taking out the seed. The whole inside is scooped out and put in barrels, and water poured over the mass sufficient to just cover it, and left in warm autumn weather about forty-eight hours, or until decided fermentation takes place. The whole is then thoroughly stirred up with a stick, allowed to settle half an hour, and the top poured off, which carries with it a large portion of the pomace. Use water freely now, filling the barrel full, and continue stirring and pouring off until the seeds are clean. To begin with, the barrels should not be filled more than half full of the pomace, and after fermenting, the barrel should be filled full of water before pouring off, as the more the liquid is reduced with water the more readily the seed separates from the pulp and settles to the bottom. This is the only plan we pursue in cleaning melon and cucumber, and it has the advantage of disposing of all light seeds, as nothing but the perfect ones settle to the bottom.

In separating the squash seed from the pulp, we are compelled to use a cylinder enclosed in a box made to conform to its shape and size. The cylinder is spiked with teeth about three inches long, with corresponding spikes in the concave of the box, and set so that when the cylinder is turned, the spikes pass like the arrangement of cylinder and concave in a threshing machine. The seeds and pulp are thrown in at one end, and while the cylinder is turned with a crank, gradually passes out at the other into a barrel, from which the final washing can be done. As soon as washed the seeds are spread out in the sun if the weather permits, or over fire heat under shelter if it is cloudy. We use frames 3x6 feet, covered with cotton cloth. If we are drying out of doors we always pile them up one frame on top of another, as many as two men can carry, and take to the dry house over night, as a sudden storm of wind and rain would cost you several days extra work, if left out of doors.

Onion.

Owing to the fact that onion seed is only considered good for one year, new stock must be annually grown to supply an immense demand, and the business of growing this seed has assumed great proportions.

The seed stock is grown and wintered the same as for market. Plant on moderately rich ground, as early in the spring as the ground can be worked, in rows three feet apart, and from six to eight inches in the row. The onions should be just covered with earth. When ripe, the seed bolls are gathered in baskets and hauled to a dry air loft, where they are piled in heaps of about twenty bushels, the windows closed, and allowed to remain until they begin to heat, when they are spread out thinly, the windows opened until they are nearly dry, when they are piled and allowed to heat again, and finally dried for threshing. This sweating process opens the pods, and very much facilitates the labor of threshing. We thresh with a flail, run four times through the fanning mill, and float in water, to carry off all chaff and broken bits of stem. After washing, the seed must be spread out thinly and dried as soon as possible.

Peas.

Sown in every garden from Maine to Texas and from Manitoba to Florida, and in large quantities at that; it takes at least one hundred thousand bushels annually to supply the demand for garden peas alone in this country.

This vast territory, or at least nine-tenths of it, cannot produce any peas fit for seed.

The whole country south of latitude 42 is so infested with the pea weevil that the peas are unmerchantable for seed or for any other purpose except for food for swine. This vast area must either import peas from Europe or have them grown in latitude north of 42.

The climate and soil of central and northern Minnesota is admirably adapted to this crop, and there is certainly a field for profitable operation.

As fine a lot of Champion of England peas as I ever saw were grown for us last summer in Le Sueur county. Our own fields near St. Paul prove conclusively to us that there is no better place in America to grow this important seed crop.

New clean land is to be preferred. We plow in the spring as early as possible, and drill the peas in four inches deep, two and a half bushels per acre of all sorts.

Rows run north and south thirty inches apart for dwarf sorts, and thirty-six inches for tall sorts. Cultivate thoroughly so as to keep the ground loose, and hill slightly to protect the roots from the sun and support the vines. We never give support to any field crop of peas; even the Blue Imperial Tall and Champion of England are allowed to sprawl around as much as they please, and we find the loss does not near approach the cost of bushing.

From the best stock seed you will always find a few spurious vines that we call the Barneyes. Go over the field at blossoming time, and pull them out. The Barneyes, as they are found in Early Kent, Dan O'Rourke, Phil. Ex. Early and Carter's First Crop, will be found with pink blossoms. In Tom Thumb, Little Gem and Blue Peter, the color of the blossom is the same, but the vine presents a rough, scraggy appearance.

As soon as ripe we go over the field with steel knives, shaped something like the blade of a pruning knife, and about twelve inches long fastened to a handle four feet long. With this implement they are rapidly cut close to the ground and left two or three days until thoroughly dry, when the vines are pitched together with forks, loaded on a wagon and hauled to the threshing floor, where they are threshed with flails. Three good men on the floor will keep two men and a team hauling, which gets the crop out of the way quite rapidly.

Clean well with a fanning mill and hand pick. The green or wrinkled sorts should be harvested before perfectly ripe in order to preserve their fine green color.

Tomato.

Tomato seed, when conscientiously saved for sale, is taken only from what we call first pickings. The first to ripen, as well as the largest and finest shaped fruit, is always formed low down on the stem and is the only fruit that should be gathered for seed purposes.

In curing the seed the ripe tomatoes are passed through a mill much like the old-fashioned cylinder apple grinder, only the teeth on the cylinder are about three inches long.

After grinding they are placed in a barrel and allowed to ferment, and are washed and dried same as cucumber or squash.

Turnip.

With a short chapter on turnip seed, I will finish the list.

The fancy white turnip, and most of the Swede or Rutabaga seed is imported from Europe. The great labor required to handle the roots in storing and transplanting in this country of high priced labor renders the business unprofitable, when grown in competition with equally as good stock grown in England and Germany.

There is now being offered in this country a large stock of worthless American seed, that is offered at a price that will temporarily ruin the business of the dealer who offers good stock, and I am sorry to say it is being offered by dealers who ought to know better. The worn out cotton and tobacco fields of Virginia are being turned to advantage in this respect.

Seed is sown broadcast of the different varieties, and without any cultivation the crop is allowed to struggle for existence and shape.

In that climate they can remain out all winter with safety, and are not harvested, but are allowed to remain just as they grew, and without any opportunity to weed out the worthless, and the whole mass is allowed to go to seed, until the field presents the appearance of a tangled growth of wild mustard. When ripe it is harvested with a reaper, and the whole operation has been attended with so little expense that the growers and dealers in this spurious article are able to undersell other dealers and reap a rich harvest besides.

About two thousand bushels of this stuff were grown last year, and some of you who buy from commissioned boxes will have an opportunity to test it.

Separation of Varieties.

I will give you my plan for securing isolation in growing a general crop. Our fields are laid out in forty acre lots, 80 rods square. We have a notion that everything should be sowed north and south, and lay out our grounds accordingly.

We will suppose we have eight sorts and wish to grow in an isolated position.

Selecting a field that suits us, we begin, for illustration, on the west side and plant ten rods wide, or five acres of Early Maine Corn.

Next to this plant five acres of Hubbard Squash, then five acres of Valentine Beans, then two acres of Cucumbers and three of Onions.

Between the next space to be planted and the Valentine Beans we have a space of ten rods, and will now plant five acres of Mohawk Beans with safety.

The first corn planted is a very early sort and we can plant five acres of Evergreen Corn, as it blossoms at so widely different periods there is no danger of mixture. We will now plant five acres of Six Weeks Beans.

We are now fifty rods from the Hubbard squash and will plant five acres of Marblehead to complete the field. In this manner we can utilize all our available land for seed growing and still preserve complete isolation.

You may remark that we are growing beans on the same soil required to grow corn and squashes. We grow beans on corn land and find it pays. We are too far from town to be able to procure manure enough to enrich a whole field fit for squashes, and consequently resort to manuring in the hill, which plan we find to work well enough for us.

Seed growing is a business that requires strict personal attention on the part of the person engaging in it. He must have every convenience for rapid work, with plenty of shelter, drying sheds, threshing floors, bins, &c. A strict system of labeling must be persisted in. From planting in the field until sacked for market the label must be made to follow the product.

Trust nothing to memory or your skill in detecting different varieties, for if you do it will sooner or later get you in trouble.

Care in this business will surely bring its reward. There is no more pleasant agricultural or horticultural industry, including, as it does, growing the finest sorts of vegetables. The new candidates are grown and anxiously watched in their development.

Acres of phlox, zinnias, petunias, and gladiolus distributed for isolation, keeping an eye to effect, have their place in this exhibit. Straight rows, clean culture, thrifty growth, all combine to give a seed farm, a self satisfied appearance, that must be a source of gratification to any one of horticultural taste who has charge of it.

U. S. HOLLISTER.

COMMERCIAL FERTILIZERS.

It was proposed to resume the discussion on this subject.

President Smith. Farm-yard manure, it is known, from long continued application loses its value and effect, and by using salt, ashes, gypsum, lime, &c., we may be able to obtain better results.

Mr. Harris. Farm-yard manure may not be the best for continued use on grapes but it is for most crops.

EVENING MEETING.

Owing to a lecture in which it was thought members of the society might be interested, the question of holding an evening meeting was raised.

Motion was made to hold an evening meeting, but was not seconded. The following motion was then made and seconded:

Resolved, That we do not desire to interfere with the arrangements of the people of Rochester and will not hold a meeting this evening.

The motion was lost.

CRAB AND SIBERIAN APPLES RESUMED.

Motion was made and seconded to reconsider the motion laying the Crab Apple question on the table. Motion carried.

Powers' Large Red (again.)

The reconsideration of Powers' Large Red was called up. Motion was made and seconded to recommend "for planting in limited quantities."

Mr. Sias. I have had it in bearing five or six years.

Mr. Jordon. It has borne four bushels on one tree.

Mr. Hoag. It is a noble bearer and perfectly healthy. The fruit is without an astringent taste. I would set 1,000 trees of it sooner than of any other variety.

Mr. Pearce. It is free from disease, free from blight. The fruit is not so large as Transcendent but much better.

Motion was made and seconded to amend so as to recommend "for trial by amateurs and pomologists."

This amendment was lost, 6 for and 11 against.

The motion to recommend "for planting in limited quantities" was lost, 1 for and 12 against.

Some talk about rings ensued, which it is not necessary to report.

Mr. Brand. It has not appeared that the fruit, though acid, has any flavor. (In answer to a question it was stated that no trees were known in Wabasha county.) I sold this variety in Wabasha county in 1866 and if they are not alive where have they gone? Those trees that are now only six years old have not been severely tried.

Motion was made and seconded to have a list of Crab Apples recommended "for general trial." The motion was carried.

Motion was made and seconded to recommend Powers' Large Red "for general trial."

Motion carried, 13 for and 2 against.

Virginia (again.)

Motion was made and seconded to reconsider action on Virginia.

Motion carried, 9 for and 5 against.

Motion was made and seconded to recommend "for general trial."

Motion carried by unanimous vote.

Blighting Varieties.

Motion was made and seconded to proceed to assign those Crab Apples "quite exempt from blight" to list with that heading, and those "quite liable to blight" to list with this heading.

The motion was carried and the following varieties assigned without discussion, by the following votes:

Varieties quite exempt from blight—

Orange, (Unanimous vote.)	Virginia, (6 for and 1 against.)
Early Strawberry, (9 for and 1 against.)	Powers' Large Red, (Unanimous vote.)
Beach's Sweet, (Unanimous vote.)	Minnesota, (Unanimous vote.)
Conical, (Unanimous vote.)	Whitney's No. 20, (Unanimous vote.)
Maiden's Blush, (Unanimous vote.)	

Varieties quite liable to blight—

Transcendent, (10 for and 1 against.)	Hyslop, (14 for and 1 against.)
General Grant, (Unanimous vote.)	

Varieties recommended and not named in these lists were not assigned, either for want of sufficient knowledge, or because they are not decidedly exempt from blight or decidedly liable to it.

WEDNESDAY EVENING.

CRAB AND SIBERIAN APPLES.—Continued.

Pending the consideration of the blight question the Society adjourned to meet at 7:30 P. M., at which time the Society was again called to order by the President, when that question was closed and other business proceeded with.

Beach's Red.

Mr. Jordan. I think quite well of this variety and some have gone to planting it in considerable numbers. It was started near Hesper. The original tree has borne ten bushels, and my trees have never failed to blossom like pinks. For hardiness they have no superior. Some that I sold three years ago are now bearing. The fruit is like the Conical in shape, tender, sub acid, nice, about the size of Transcendent.

Mr. Mason. I can confirm what Mr. Jordan has said. It bears every year and does not blight.

Motion was made and seconded to recommend "for general trial."

Motion carried by unanimous vote.

Motion was made and seconded to place on list of varieties quite exempt from blight.

Motion carried by unanimous vote.

COLONEL HEALY'S PAPER.

It was proposed that Colonel Healy's paper should be read and it was accordingly read by the Secretary, Colonel Healy being absent. After the reading a vote of thanks was tendered and a copy requested for publication.

The following is the paper in full:

THE LOCATION, LAYING OUT, PLANTING, AND CARE OF
CEMETERIES.

To the Horticultural Society of the State of Minnesota:

GENTLEMEN—Having been requested by a member of your society to make a short report on the subject of cemeteries, the manner of laying out, planting, ornamentation, &c., I very reluctantly consented on account of my inadaptedness to a service of this kind. I have had some experience in the laying out of cemeteries, to be sure, and I laid out and surveyed the several sections in Oakwood Cemetery of Rochester, Minn., that have been laid out; but to delineate and explain the matter in a report is quite another thing, and I have therefore introduced with this report a copy of section No. 3 in said cemetery, the more fully to exemplify my views.

Cemetery in its most comprehensive meaning embraces all burying-grounds, but in modern times it is almost exclusively applied to ornamental or rural burying-grounds. Formerly it was the custom to bury in church yards, and it originated in this wise: In the Dark Ages, if the remains, or any part thereof, or something representing the remains of a dead saint to whom a church may have been dedicated, could be obtained, they were buried near the altar in the choir. "It became a prevalent desire of men eminent for piety or high rank thus to be

buried in churches, that they might be near these saints. The extension of the practice was the origin of church yards." These in walled and crowded towns became unhealthy. The removal to large tracts outside the city was first practiced in Paris, in which, as the largest walled town in Europe, the disposal of the dead had long been a matter of anxiety.

The new places of interment began to develop humanizing and elevating influences, in beautiful trees, shrubs and flowers and works of monumental art. This practice, originating in the Pere la Chaise cemetery near Paris, extended to London and other English cities, and in the United States, particularly in Brooklyn and Philadelphia, there are cemeteries equal in arrangement to any in Europe.

So determined were the people to abide by the old practice that the English government in 1850, as a sanitary measure, enacted a law for the closing of grave yards in crowded cities. It was applied first in London, where the danger was most urgent, and was afterwards extended to the English provinces and to Scotland.

Another quite as senseless a custom, the burial of the dead with the head to the west, has been almost entirely superseded by a promiscuous deposit without any view as to the direction in which the body should lie. This also, I imagine, has been brought about principally by the establishment of rural cemeteries, which are generally laid out in such manner that but a small portion of those interred could be laid in that manner.

Site.

Grounds for cemetery, if extensive, should be diversified, consisting generally of slight elevations and depressions, interspersed with occasional deeper indentations for a fountain or small lake, with space around the same for a grove and seats for the weary; also occasional higher elevations with steep banks are desirable for the erection of vaults or tombs. These differences in elevation should not be enough to make the grounds difficult to traverse but sufficiently so to make them conspicuous.

Avenues, Drives and Walks.

Having selected suitable grounds the next thing of importance is to locate the avenues, drives and walks or paths to conform thereto, which of course will make them more or less circular and often serpentine. To demonstrate, in the plot at A and B are prominences, and the ground at A is encircled in an elliptical form by an avenue and walks which very nearly correspond to the form of elevation. To the west and north of this elevation the descent is very gradual and the avenues and walks are laid parallel to the central figure, while in other directions they are changed. On the east side of this elevation the descent is more abrupt and terminates in a depression sufficient for the erection of a fountain. Still east of the fountain and between it and a main avenue is a plot not quite elevated enough for graves, and is set apart for a hitching ground. At B is another slight elevation which is surrounded by an avenue and walks, forming a complete circle fitting the contour of the ground almost exactly. This section is surrounded by others which are laid to conform to the ground in a similar manner. Other formations might call for very irregular serpentine avenues and paths, and such is the character of the Greenwood and Mount Hope cemetery grounds.

As a rule the main avenues should follow the more depressed portions of the grounds, occasionally crossing a ridge to again enter low ground or perhaps a ravine, and the lots and paths should occupy the elevations. Avenues should be 20 to 25 ft. broad, drives about 15 ft. and walks 6 ft. to 8 ft. The majority of lots should contain from 350 to 400 square feet of surface each, and located where the contour of the ground is pretty regular, as in the plat, in blocks of some 6 to 12 lots in a block, with one tier of blocks backing against another tier and pointing on either an avenue, drive or walk. Between the lots there should be left by the owners a space some two or three feet in width for a path to afford a passage to the back end of lots without crossing the same. On steep sidehills a walk would be necessary between each tier of lots, and in very diversified irregular grounds, such as the Greenwood, no uniformity should be observed, and the form of lots should vary according to circumstances, depending upon the peculiar surface of the ground. These lots are to be laid in circular, square, oblong, octagonal or elliptical form, as the circumstances of each case render desirable.

Enclosure of Lots.

Much might be said in regard to the kind of enclosures for lots, the propriety of combination in such enclosures, the kinds of monument that should *not* be erected and the manner of erecting such as are proper, and also concerning improvements generally, might be touched upon, but it would extend this report beyond the limits I had designed—I will however say that no wooden structure should be allowed either as an enclosure or monument and that thin marble slabs if over two feet in length should be laid horizontal, because the ravages of time will at no distant day be sure to bring them to that position.

I think that light and symmetrical hedges or heavy cut stone blocks are the most appropriate for borders to lots, the hedges in this climate to be formed of the *Siberian Arbor Vitae* or other shrub that is equally hardy.

Planting.

The planting of trees, shrubbery and flowers in the older cemeteries have especially engaged the attention of those having control, and the general conclusion arrived at is, that care ought to be taken in the kind and amount of the articles, especially forest trees, which have often been removed in consequence of their branches obstructing the view, discoloring monuments, and the swelling and extending of the roots, disturbing the foundations of monuments. Instead of on lots forest trees should be placed on the borders of wide avenues and other places outside of lots purposely reserved.

On this subject a late report of the secretary and comptroller of Greenwood Cemetery has the following: In view of this great and increasing evil, caution in the matter of tree planting is becoming more and more desirable. However pleasant the shade, the sunshine is better. Greenwood has all the shadow it needs, though another tree should never be planted there. Our experience shows that it would require but a few years of unchecked growth to convert the whole cemetery into a jungle. We entreat all who are or who may become lot owners in Greenwood to be sparing and judicious in the setting out of trees and shrubbery. It would be well, indeed, if the smaller lots were never planted with any thing more spreading or of more rapid growth than the yews. There is nothing so neat and clean, nothing that is so pleasing, at all seasons and to all eyes as

close shaven green sward. Of nearly all trees it may be said that they impede the growth of grass and flowers, while in many cases the hindrance is complete.

In regard to flowers the same report says: "Care ought then to be taken that *too many* flowers are not set out, and that the kind and colors of such as are selected be appropriate. Nothing coarse or incongruous with the object and place should be chosen. Those which are delicate in size, form and color should be preferred—such as are simple and unobstructive, and particularly those which are symbolical of friendship, affection and remembrance, seem most fitting to beautify the 'Place of Graves.'"

Most respectfully submitted,

GEO. HEALY.

DISCUSSION.

Planting.

Mr. Harris. If we could get at some principles in the planting of cemeteries it might be of some use. Would like to have trees and plants recommended for that purpose. In the older states large trees have been found objectionable. Would like to see a list of moderate growing trees, roses, and herbaceous plants.

Mr. Sias. I have tried both the American and the English yew but they did not survive.

Mr. Jordon. Many have been planted in this city but they are all gone.

Mr. Pearce. I used to think a cemetery an unpleasant place, but now I think it a beautiful place. We show ours to all who visit the city. The lots are kept of uniform height and covered with Blue grass. Flowers are grown on them and a moss rose, nearly hardy, has been extensively planted. Verbenas are also much planted, especially white ones.

Trees to Plant.

Mr. Jordon. It would be wise to recommend some trees. I have planted many and have planted reluctantly anything but Arbor Vitæ. I fear our cemetery will yet be overrun by large trees as Pines, Balsams, &c.

Mr. Elliot. I would suggest the Savine Juniper and the native Trailing Juniper.

Mr. Sias. The best three trees of my acquaintance are the Prostrate Juniper, Savine Juniper and Arbor Vitæ.

Mr. Latham. Does any one know the Mountain Pine? I have only seen it four feet high, but Douglass says it reaches ten feet at maturity.

Mr. Pearce. I introduced the Rocky Mountain Dwarf Pine three years ago. It grows very symmetrically round and is very hardy, but is too dwarf for level ground.

Mr. Dart. I think the Mountain Dwarf Pine adapted to the purposes named. A neighbor of mine prizes it more highly than any in his yard. There is also the Tom Thumb Fir and the Tom Thumb Arbor Vitæ.

Mr. Sias. I have the Tom Thumb Arbor Vitæ and it has done well.

President Smith. The Tom Thumb Arbor Vitæ has proved tender with me,

Mr. Hart. The Trailing Juniper is the most beautiful dwarf plant I know of.

Mr. Hollister. Something is wanted to relieve the evergreens. The European Cut-Leaved Weeping Birch is the nicest thing for this purpose.

President Smith. There should be something in the cemeteries besides these pigmies, but not on the lots.

Mr. Elliot. At Lakewood we have a superintendent, and before anything is planted his approval and consent must be obtained. Hard Maple is the best for drives in cemeteries.

Mr. Jordon. The Weeping Birch is hardy here.

At this point the discussion on planting cemeteries was closed, and it was decided to postpone the President's address until Thursday morning.

MR. WILCOX'S PAPER.

Mr. Wilcox was requested to read his paper. At its close a vote of thanks was tendered and a copy requested for publication.

The paper was as follows:

THE PROPAGATION OF HARDY TREES.

TREMPEALEAU, WIS., Jan. 28, 1878.

C. Y. Lacy:

The act incorporating the Minnesota State Horticultural Society says: "Article 2. The object of the society shall be to collect, condense and collate information relative to all varieties of fruits, flowers and other horticultural productions, and dispense the same among the people."

In contributing my mite to the above, I shall draw largely from the experience, observation, &c., of other men, believing that a vast territory and the experience of those conversant with fruit-growing therein, will be more valuable than my own in a limited sphere, I shall, however, not forget to give a short account of my failures and success and hopes for the future.

The first work in growing an apple tree, like building a house, is a good foundation. If this is built on a sandy foundation it will not stand, so if an apple tree be grafted on a tender root. The winter of 1872-3 taught us in Wisconsin, Minnesota, Northern Illinois and Iowa, a very expensive lesson which ought to be turned to profit in the future. The winter of 1874-5 should teach the same lesson in Michigan, Ohio, Indiana, Illinois, Iowa, and even New York.

Now I will call up my first witness, F. R. Elliot, he says: "The growing of trees from grafting or budding upon roots of seedlings grown from the refuse seeds of apples or pears from the mill is no better towards the improvement and reliability of varieties, than that of growing stock or mankind from haphazard meetings. Selections of all future life must be made to secure advance, by growing, in the vegetable as well as the animal, from pure and hardy stock, free from contamination.

"All the records of growth and longevity of orchards may be traced to the stock upon which they have been worked. It is the same in the vegetable as the animal kingdom. If the native healthy character is not kept up by the knowledge of the proprietor and manager, then decay must exhibit itself in a large percentage of the stock."

From this want of knowledge of the origin and hardihood of the stock comes the great loss of trees in our orchards.

As the origin and hardihood of the stock is Mr. Elliott's main idea, let us next enquire of Charles Downing about that. He says:

"Transplanted into a warmer aspect, stimulated by a richer soil, reared from selected seeds carefully pruned, sheltered and watched, by slow degrees the sour and bitter crab expands into a golden pippin." Now to attain this great excellence in quality of fruit how much have we lost in hardihood of tree, and this is the next object of enquiry. We lost in our nursery the winter of 72-73 about 60,000 trees by root killing. They were grafted the common way on apple roots; about 40,000 were one year old—nearly all killed, while say 10,000 seedling crabs same age along side went through without injury; about twenty three-year-old crab seedlings top worked with Tetofsky came out all right, while 120 same age and variety grafted on apple roots were nearly all killed.

In the orchard consisting of about 1,500 trees, all ages from a few years up to 15 years, about 1,000 were root killed, even transcendents 10 years old; these leaved out in the spring, set fruit a little later; seeing that the leaves and fruit did not increase in size, I took my spade and found the roots all dead. Charles M. Hambright, of Gould's Nursery says: "I might add that side by side in our yearling seedling block the common apple seedlings were 95 per cent killed, and not one of the crab with about the same proportion of loss in our three and four year old grafts."

Pres. Tuttle says: "Root killing is often mistaken for blight, for the outward form of the injury is much the same in both cases." I might multiply testimony almost indefinitely from my scrap book, but will stop on the root question after quoting extracts from two letters. The first is from Charles Downing; he says: "I should think you are on the right track, that is, obtain the hardiest root stock, then graft your best and hardiest kinds on that stock." Samuel Foster writes: "I learned some years ago from D. W. Adams of Alamakee county, Iowa, that in that region they would not depend on the seedling roots to graft on except to put in a long cion and plant deep, then the cion would take eoot. Your plan of crab roots is no doubt best. I have sometimes top dressed the crab and have seldom or never known their roots to kill.

Here I will rest my case as to the root and introduce a few of the plans of those who believe in grafting upon roots grown from seeds indiscriminately obtained from the mill.

1st. A long cion and deep setting.

2d. Slitting the bark near the ground when transplanting, (this is the work of the purchaser.)

3d. The nurseryman to dig his trees when one year old and replant them setting six inches or more deeper than before."

4th. Mulch about the trees. I will not give my reasons at any greater length for preferring crab roots.

Now, having, as I believe, shown how to get a good root to graft upon can it not be shown how a tree can be grown which will stand our climate. This is our plan: Graft the Transcendent crab upon crab roots grown from seeds of Transcendent, Hyslop, Golden Beauty, or any of the Siberians which we have, using a long cion and setting deep. When the Transcendent is large enough bud into its limbs such hardy standard apples as have proved best adapted to this climate as well as best adapted to this work. Some kinds are failures when thus worked. We do not mean to say the Transcendent is the best or only kind of tree we would use for this work, in fact we hope a number of kinds will prove better by being less subject to blight.

Now I will give a brief history of our failure and success in top working but will not go back any further than 1872. In the nursery that year we had some hundreds one year old from the bud put into three year old Transcendents. These were grafted on common apple roots. Our theory then was that hardy varieties worked the usual way by grafting upon apple roots was well enough and that more tender kinds, such as Domine, Jonathan, Early Joe, Wagner, &c., could be grown in this way. The following winter took the conceit in both cases out of us. In the first place many of the Transcendents were killed to the root and where they survived most of the buds of the above kinds failed. A few of these trees lived and were transplanted into the orchard one and a half feet deep, soil generally loam with a gravelly subsoil; they have done well, except some more of the tenderest kinds killed last winter. Since then both in the nursery and orchard we are using the hardiest kinds we know of adapted to this work.

We find Wealthy, Price's Sweet, and a seedling we have perfectly at home, Plumb's Cider Utter, Fall Orange and Fall Stripe do very well; Walbridge and Haas, some defective unions; Duchess, Fameuse, Tetofsky, not a success on Transcendent, but on seedling crab Tetofsky and Duchess do very well; the Orange crab is a failure top worked on Transcendent; Willow Twig works well and stands well so far. Now I could furnish reports from Maine to Nebraska of those who have themselves or know of others who have practiced top working upon the common apple and always with greater success than when worked the common way. If done upon Transcendent or other hardy crabs Hybrids or even well known hardy standards like Duchess or Wealthy how vastly better would be our prospect of success. The best evidence of faith in some of the fruit men in this plan is found in their works. They have in their own grounds for their own orchards from a few trees up to thousands top worked on crabs, thus practically endorsing this plan, except the roots are the old way and they are making great efforts to get crab roots even paying five times as much for crab seeds as the common apple seeds cost. Now a few words about the future of apple growing in the Northwest. Horace Greeley found the man he had been a long time looking for who could raise an average of one hundred bushels of corn to the

acre near Grinnell, Iowa. I have been looking a long time for a young man just starting in life who believes in apple growing in the Northwest. Have any of the members ever looked around upon the faces of those found at our winter meetings and noticed how few will be seen below the age of middle life and how great is the proportion of grey beards. Where are our young men getting their education? Is it at the saloon and caucus? I know it is not at our Horticultural meetings. Still these old fanatics are laying the foundation for future success in apple growing in the Northwest.

Since writing the above I have received the following letter bearing upon the subject.

E. WILCOX.

FARIBAULT, 1, 28, '78.

Friend Wilcox:

In reply to yours of the 19th, I will say: In the spring of 1874, I set about five thousand Wealthy, and twenty-five hundred Malinda root grafts planted side by side on very rich, deep new land, the soil being black sandy loam. These were grafted on common seedling stocks. They came well and made remarkable growth, many of the Malinda standing three and a half feet. I think that was the highest point they ever reached. The next spring the whole lot were injured badly, but the Wealthies came on and made as nice a lot of trees as could be desired; no root killing noticeable among them, and making at four years old, heavy six to seven foot trees. From the twenty-five hundred Malinda grafts I have never dug twenty-five good trees. They were nearly all root killed. They did not ripen their wood the first fall; the Wealthy did. The same spring I grafted in April, about the 10th, twenty-five hundred Wealthy and two hundred Malinda on crab roots. This lot were also planted side by side, about three weeks after the first lot. They all grew well, and I think the Malinda looks as well to-day, every thing considered, as the Wealthy. The soil on which the last lot was planted was more dry and had more clay in it than the first piece. My opinion is that it was the crab roots that saved the last lot of Malindas. The last lot are on a western slope, the first on level land.

Very truly yours,

O. F. BRAND.

DISCUSSION.

At the conclusion of the reading the following discussion was held:

Mr. Sias. We don't want to graft everything upon crab roots, I find the best success attends the closest relation between stock and graft, hence the apple had better be put on the apple root, then set the tree four inches deeper so as to get roots from the graft, and afterwards mulch the tree so as to insure against loss by root-killing.

Mr. Wilcox. But Mr. J. J. Thomas truthfully says, continuous mulching requires too much labor.

Mr. Latham. I have found obstacles to the use of crab roots, but top working half hardy trees upon the Transcendent makes them hardier. Those thus put in before the hard winter, are now living.

Mr. Pearce. Since the hard winter I have used a short root and long scion and set deeply and of good trees, thus treated I have not lost one by root-killing.

Mr. Jordon. The apple on its own root is better than on any other. I have 1,000 Wealthy trees that have been top-worked for three years. As a rule the top-working of standards on crabs is a failure, but as the exception it is a grand success. The Hyslop is best for the Wealthy. The Transcendent is good for Plumb's Cider, and Rollin's Russet for the Haas. Am convinced that many half hardy varieties can be successfully grown by top-working. The Jeniton on the Transcendent. As to the time of working—it must be done in the first weather after January that is warm enough for a man to work out without gloves. Set the cion as close to the main stem as possible so that no beetle may be formed on the branch. The wax should contain no animal fat, but consist of four parts resin, one part beeswax and one-fourth part oil of turpentine and more or less oil, according to the temperature of the day. Pull this mixture until it is like taffy, then go to the orchard, drawing the wax into ribbons wind it round, without twine or any thing else.

Mr. Latham. Mr. Gideon paints the wax on old sheets and pillow cases. I have used it also thus and it can't be beat.

Mr. Harris. I don't believe in hybrids between the common apple and the crab—they don't bloom at the same time.

Mr. Jordon. I beg to differ, because of the Hesper varieties. They are all from the same variety of crab, but there is a great difference in size, and many resemble some particular variety of apple. They came from a bushel of apples that were thrown out, frozen, from the trunk of a stranger, and these apples came from an orchard of standard apples with one crab apple tree in it.

Mr. Harris. I have two seedlings from the Transcendent. The fruit of one is nearly as large as my fist but the seed of that tree came from a season when the Transcendent was out of bloom before the Standard apple was in bloom.

At this point the Society adjourned, to meet at 9 o'clock Thursday morning.

THURSDAY MORNING.

The meeting was called to order by the President at 9 o'clock.

COMMITTEE ON FINAL RESOLUTIONS.

Messrs. Latham, Hollister and Miller were appointed a committee on Final Resolutions.

REPORT ON FORESTRY LAWS.

The committee on Congressional tree-planting and other forestry laws, reported through its chairman as follows:

Your committee to whom was referred the duty of reporting such amendments to the congressional timber culture act, as we demand necessary to best promote and encourage the growth of forests on the western prairies, agree in recommending that said act of congress be so amended as to embrace the following points:

First, That every legal sub-division of 80 acres of government prairie land be made subject to entry under the provisions of said act.

Second, That 10 acres of land covered by any timber entry be planted and kept in a healthy growing condition.

Third, That the trees be planted not more than four feet apart each way.

Fourth, That at the time of proving up there shall be not less than 900 trees standing on each acre, and that the rows of trees shall be not more than 8 feet apart, and the trees standing in each row not less than four feet apart in the row.

Fifth, That the entire amount of ten acres of breaking be done in the month of June next succeeding the date of entry.

Sixth, That said ten acres of breaking shall be thoroughly subdued by two years of cultivation after the season of breaking, and that the third year after breaking the ground the trees shall be planted.

Seventh, That at the time of proving up the trees shall average ten feet high.

Eighth, That in the event of any failure to break and cultivate and plant as hereinbefore specified, the land so entered shall be subject to entry under the provisions either of the timber culture act or the homestead act.

Ninth, That the claimant be allowed to propagate his trees either from seeds and cuttings or by transplanting.

Tenth, That the claimant be allowed to plant his trees in groves of not less than two acres in each grove, or in belts not less than three rods wide on any part of the land.

Respectfully submitted,

L. B. HODGES,
O. F. BRAND.

Your committee to whom was referred the memorial to congress of the committee of the American Nurserymens' Association, would recommend a hearty endorsement of said memorial by this society. We recognize the fact that the

future welfare of the nation depends largely upon the success of a system of forestry which will ultimately reclaim the great treeless region of the North American Continent, and render it a habitable and revenue producing region.

We have carefully examined said memorial, and no language at our command would more clearly set forth our own views. We cordially endorse it, fully believing the accumulated experience of European nations would greatly aid us in many ways, and as the sense of this committee we submit the following resolution :

Resolved, That the members of the Minnesota State Horticultural Society, recognizing the great importance of gaining a more correct knowledge of the science of forestry, do hereby most earnestly and respectfully urge upon our senators and representatives in congress to use all honorable efforts to secure the passage of the Bill No. 1218 of the House of Representatives.

Respectfully submitted,

L. B. HODGES,
O. F. BRAND.

DISCUSSION.

Distance to Plant.

After reading the report the following discussion was held:

Mr. Dart. The planting recommended is too thick. The trees must be taken out or they will die out. Think the underbrush ought to be cleaned out of nature's groves.

Mr. Sias. The nearer the trees stand, the less brush, the better the shape.

Mr. Somerville. Have had an experience with trees seventeen years, when set twelve feet apart they make brush, when you want a straight, thrifty tree set out four feet by four, and cut out the stunted ones.

Mr. Jordon. The bill is too strict in its provisions because in case of failure the settler loses his claim.

Mr. Harris. Four feet by four is not too close, rows four feet apart and trees two feet in the row would be better.

Mr. Dart. Four feet by eight would be better than four feet by four.

Mr. Pearce. There is no danger of getting the trees too close.

Mr. Hollister. Must plant close enough to get straight trunks. Would plant four feet by four if I had ten acres to plant. Have seen them planted in Wisconsin ten inches apart in the row and afterwards thinned.

Mr. Hart. Have helped to plant trees in Europe. They plant close there.

Mr. Wardell. Six years ago I planted 25 acres for shelter and timber. Planted White Willow, Cottonwood and Soft Maple. Planted the Willows four feet apart and after five years took out enough for two years' use. A neighbor runs three fires from the trimmings of six acres. He cuts in June, seasons for one month, and then puts into the shed. I cultivated the trees like corn for three years. They are a source of profit, ornament and usefulness. I can sell my farm for from \$10.00 to \$15.00 per acre more than I could without them. My grove and orchard are the last things to be neglected. I would plant again in the same way. Have not yet taken out any trees, but only branches. Where the trees have been mainly lost in any way, the remaining ones are of little account. Everywhere they succeed best with close planting and the thinning process.

Mr. Hodges. Two years' cultivation is required before planting for subduing the prairie sod.

It was moved and seconded to take up the report section by section, which motion was carried. The first section was read. A motion was made to amend it so that it would correspond to the action of the State Forestry Association.

A motion was made and seconded to lay the report on the table to be taken up at any time.

This motion was carried.

PRESIDENT SMITH'S ADDRESS.

President Smith then read his annual address, which was ordered on file for publication. The following is the address in full:

Ladies and gentlemen of the Minnesota State Horticultural Society:

Another year has passed, and we meet again for mutual instruction, to review the past and prepare for the future. When we turn back the pages of history, both sacred and profane, we find Horticulture old as man himself; that it was the first occupation of man, and has continued to occupy his attention more or less ever since, and yet, how imperfectly is it understood. Then why should we be discouraged if we can not solve all of its problems in the short space of a few years. Yet while Horticulture is so old, Horticultural Societies are of recent origin. The oldest in the world of which we can find any record being but seventy years, and within the memory of many still living, was organized in London in A. D. 1808, and called the London Horticultural Society. One nobleman, Sir Joseph Banks, and two private gentlemen, were chiefly instrumental in its organization. This society established the first experimental garden in A. D. 1817; and this model garden still exists and flourishes at Chiswick, having been removed there in the year 1822. From this beginning horticultural and kindred societies soon sprang up and flourished in different parts of the old world, Ger-

many and other nations soon following in the good work. The first and oldest society in the United States is claimed by the Pennsylvania Horticultural Society. They celebrated their fiftieth birthday December 21st, 1877, and at the time of that celebration, three of its originators were still living, to wit: David Landreth, the well known seed man, and Jeremiah and Moses Brown. May not these men well be classed among the fathers of horticulture in America, and should we not honor and respect them for the good they have accomplished? Can they not look back with pride upon the advance in horticulture in all its branches in the last half century, and see the improvements, the new varieties of fruits, flowers and vegetables, that have taken place in the last fifty years, many of them under their observation and through their aid and assistance, and the benefit that society has been, not only to the state of Pennsylvania, but to the United States and the world?

Now, when we remember that since the formation of the societies above named, and with their aid and assistance, and with the aid and assistance of the many hundreds of societies since formed, there has been more advancement in horticulture, horticultural implements and knowledge among the masses, and the improvement of old varieties and the introduction of new, rare, and before unknown varieties of fruits, flowers and vegetables, in the last fifty years than in the two thousand years previous. Now, when we look upon the past, and see what has been accomplished in the last fifty years under the many difficulties they had to contend with; and when we take into consideration the advantages we now have; the facilities of correspondence and the experience of the best and most eminent horticulturists; the abundance of horticultural reading, books and periodicals; the cheapness, and facility of obtaining new and rare plants and seeds from all parts of the world; our system of railroads, steamships and express companies and mails, all aiding us, together with the number of horticultural and agricultural societies in all parts of the United States and most of the civilized world, shall we not look with hope at the future of horticulture? Can we not take hold and work with courage and with a reasonable expectation that if we do our whole duty we shall see much greater progress in the future than in the past; and may we not confidently expect to see many new and choice fruits raised in Minnesota, and in abundance to supply all the wants of her citizens, so that we may have enough and to spare? Shall we not take hold with a will and with courage to work for the best interest of our society, our state and her citizens?

Horticulture is a study, always fresh, always presenting something new to admire. The book of nature is always open for us to read, and the God of nature is always ready and willing to show new beauties and new and rare species to the willing and attentive student; and we find our oldest and ablest horticulturists still as close students and as eager after knowledge as the new beginner. Men like the late Thos. Rivers, are as earnest as ever in the search of its hidden mysteries. In fact the pleasures of horticulture and the desire to acquire a more perfect knowledge seems to grow with our old age. When once fairly enlisted in the cause nothing seems to dampen our ardor and zeal in the good work. Neither age nor infirmities, cold winters, early or late frosts, will drive us from our chosen profession.

Now as we are in our infancy, only eleven (11) years last October since the first attempt at an organization in our State, and five (5) years since we commenced work under our present constitution, may we not hope, before we have attained our fiftieth birthday as a society, that we may accomplish much for our state. If

any of us now assembled should then be living to help celebrate that day of our existence as a society, may they not point with pride to the orchards, vineyards and fruit gardens, beautiful lawns and shade and ornamental trees along our principal streets, roads and avenues, grounds decorated with evergreens, shrubbery and flowers, glass structures well filled with fruits, flowers and exotic plants, as a part of what the Minnesota State Horticultural Society has accomplished? Now in order to do this we must enlist the masses to help us work. We must secure local societies in every county, town, city and school district. They must hold their meetings monthly, or oftener, and must exhibit at the same their fruits, flowers and vegetables in their season, compare notes and modes of cultivation, and from their united experience select the best varieties and modes of treatment to be presented to this Society at its winter meetings. Then from these varied reports from all parts of our State, we will have a basis to work upon, something from which to select what is best for the State at large and for special locations.

At a former meeting there was a committee appointed with this in view—to draft and prepare a blank form of constitution and by-laws and have the same printed so that they could be distributed throughout our State and help to facilitate the organization of such societies. I sincerely hope that committee has performed that duty, and that we may soon have many local societies. May I not again call your attention to the necessity of a State Entomologist, and through you, if you should think best, the attention of the Governor and Legislature? I think one should be appointed and paid by the State, which could be done at a very small cost in comparison to the benefit to be derived therefrom. Could not some of the professors or teachers of some of the State institutions of learning, that are competent and willing, with a few hundred dollars added to their salary, perform the duties of State Entomologist, and thus not burden our already heavy tax payers to any extent, and still be of much and lasting benefit to our entire State?

Permit me to again call your attention to the subject of cranberry culture, believing as I do that it is one of the great resources of our state. With thousands, if not millions, of acres of the best cranberry marshes in the United States lying idle and useless, should we not urge their improvement, that they may become productive, and help to increase our exports as well as the health, wealth and comfort of our citizens? Cannot capital and labor from the older states and men that understand it be induced to take hold of the matter? I think it would pay our State or our railroad companies to take hold and to donate a few sections of suitable lands in small tracts, upon certain stipulations that the parties should plant and properly cultivate in cranberries for a series of ten years or more, and thus give the business a start, and not let these lands lay dormant the next twenty or thirty years. When we take into consideration that as our country settles up and our cities and towns grow in wealth and population the demand for the cranberry constantly increases; that they now have to be imported in large quantities to supply this demand; that our once full supply of wild fruits, cranberries especially, is constantly declining as the country becomes settled up; that the marshes are being filled up by the washings from plowed ground, and run over by the herds of cattle that roam by the ten thousand over the unfenced portions of our State, tending to exterminate the once abundant crop of wild fruit. When we take into consideration that the cranberry properly ripened, and grown and handled with care, can be kept in a fresh state, without canning or other expensive process, for one year or more, and that it can be sent to distant

markets at a small percentage on its cost or worth, in comparison to wheat and other heavy produce; when we witness its successful cultivation in several of the older States, should not we give attention to the subject? As an illustration of its importance, one gentleman in New Jersey, Jas. Hinchey, near Medford, is reported to have commenced about twenty years ago, on an old mill pond of ten acres, which cost him to put into a bearing condition about \$1,600, and took three years to accomplish it, and from which he has taken seventeen crops without a failure, and never less than one hundred bushels to the acre. From this commencement he has now several hundred acres valued at from \$100,000 to \$200,000, with a net increase of from \$20,000 to \$40,000 per annum, with a crop in 1877 that was estimated at twenty thousand bushels, and to require ten thousand days' labor to harvest. This success has been reached in a State where disease and insects prevail to such a degree that the aid of the microscopist of the United States Department of Agriculture was called to aid in discovering a remedy for the disease of sun scald or rot, which often destroys whole crops of many of the growers. Now what this society and the State at large needs most is knowledge; to know what to plant; what our particular soil and location is most suitable for, what varieties will succeed best, which are the hardiest and most productive, which are best adapted to each locality. Now where are we to get this knowledge and to look for correct information on this and other subjects of the kind? May we, or should we not, with confidence look to our State University, the agricultural department thereof, and its professors and students, for much of this information?

If we give the encouragement they deserve, and fill their classes and halls with our sons and daughters, as we should, will not the great wants of horticulture and agriculture soon be spread broadcast all over our state? Especially if in addition to the above we organize local, county, town and school district societies.

We should establish or help to establish in every city and town, a system of fairs or exhibitions, to be held for the purpose of showing our products in their season of maturity and sale. Exhibitions can, if properly managed, be of the greatest benefit, both in spreading a desire to excel and in exciting competition, and will thereby increase and promote the interests of horticulture in our state, until we shall find every school house surrounded with its shade and ornamental trees, flowers and shrubs, and every city and town with its parks and lawns well planted with shade and ornamental trees well cared for. Let us strive to have every farm have its fruits, vegetables and flowers in abundance, as well as its lawns, shade and ornamental trees, thus causing homes in Minnesota to be loved and sought after, and creating a desire among our boys and girls to engage in fruit and flower growing, and to make their homes the most pleasant and happy places on earth. This matter of exhibitions or fairs has been a study and problem upon which most of us have spent much time and thought, and upon which as far as I can learn, there has been no satisfactory conclusion arrived at, but one point upon which all agree is that there is a necessity for these exhibitions, in order that we may see the varieties and samples that we wish to discuss and learn about. Who cannot get a better idea of an apple, pear, bunch of grapes, flowers, or any thing else we wish to discuss and learn about by having the same before his eyes, that he may add the sense of seeing to his facilities for learning the best varieties and modes of cultivation. Now, desirable as these frequent meetings and exhibitions are, few can be induced to attend them—say they can not spare the time, and many say it will not pay. I, for one, believe we can not do without them in some shape without great loss, and will, at the risk of ridicule and being called a

fanatic, propose a new plan; one I am confident, if well matured and properly conducted, will do more to stimulate and increase an interest in, and advancement of, not only horticulture but agriculture and other kinds of employment, than all the fairs ever held. It is this: establish in every town or city, big or small, a central and well filled public market, where all can meet and bring the products of the garden and farm, and have ample room to display and arrange to the best advantage whatever they may have to sell, be the same a load of wheat or potatoes, a cow, horse, or apples, grapes, vegetables, or a bouquet of flowers. Here would come together both producer and consumer, the producer as exhibitor and the consumer as judge. The latter will be ready and willing to pay a premium on the best and finest grown specimens of every kind, in better price and more ready purchase, while the man who produces the best will receive his premium, without the interference of any rings or national rules, or without being compelled to spend the entire week waiting to know whether he is entitled to a premium or not. Here all can meet on common ground, and show what they have to the best advantage; and where all come into competition, does it not give us all a chance to see the best and to learn of new varieties and new modes of cultivation? If any one has anything new all want to know about it, how it succeeds, where it can be obtained, &c.; and can we not there learn and see much without loss of time, money or stock on exhibition. We can have a short meeting in some suitable location, for discussion, if desirable, without much extra expense in time or money. I firmly believe, after an experience of many years in the business, that if the farmers and gardeners in each and every town or city, would agree to sell their produce at a central location or market, and upon a regular market day, in small towns once a week at a certain place and time of day, and in city three times a week or every day, the producer and consumer would both be greatly benefited thereby, and an interest in horticulture be raised and encouraged among the masses.

Now, as heretofore, I must advise you to go slow in order to make haste, and in order to accomplish the most good in the shortest space of time. Let us be very careful to only recommend for general culture such varieties of fruits, flowers, vegetables or trees and shrubs as are well known to succeed with ordinary care and cultivation and such only as will succeed in most of the soils and situations where the masses are likely to plant them. For instance, we all know that the Duchess apple and the crab apples are likely to succeed in most soils and localities, and will give more dollars and more satisfaction. A few trees or plants that are hardy and will succeed and produce fruit in abundance are more satisfactory than whole orchards or plantations of worthless stuff. Fruit growing in Minnesota, for the present, at least, will be pursued by those who have a love for it and by those who are willing to take care of and study the habits and wants and necessities of the kinds planted and the soils and situations most suitable for their growth, instead of by those who seek the profit there is in large plantations and orchards without care or thought of what is to be a success. I for one believe that with proper selections of soils, locations and varieties, fruits, such as apples, cranberries, grapes and other small fruits can be grown with a reasonable profit to the grower to supply the wants of our own citizens and some to export, with the addition of health and wealth to our entire state.

In closing let me urge you, one and all, to help bring about a more general knowledge of horticulture in all its branches; and here let me say we should devote more time to the subject of vegetable culture, all of which is more practical and profitable, as far as our own use is concerned. There are many new and improved

varieties, or claimed as such, I would like to have discussed. Can we not all learn something in the matter by an interchange of views? In conclusion I thank you for the many kindnesses you have bestowed upon me, and the unity and harmony that have characterized our meetings the last five years. Hoping you will forgive my errors, and believe them of the head and not of the heart, and that I shall be ever and always willing to join hands in any and all projects that I can see or believe for the best interests of the Minnesota State Horticultural Society, Minnesota Horticulturists and the state and its citizens, I close.

REPORT OF FINANCE COMMITTEE.

The finance committee submitted their report, which was accepted, as follows:

Your committee have examined bills and vouchers presented by Sec. Lacy, amounting to \$32.75, and bill of J. T. Grimes, amounting to \$2.65; found the same correct, and recommend that orders be drawn on the treasurer for the amount.

SETH H. KENNEY,
U. S. HOLLISTER.

REPORT OF TREASURER.

The treasurer submitted the following report which was accepted.

REPORT OF THE TREASURER STATE HORTICULTURAL SOCIETY, GIVEN AT ROCHESTER, JAN. 17th, 1878.

Amount in treasury at the close of its last annual meeting at Owatonna,	
January 18th, 1877.....	\$17 55
Membership fees received of C. Y. Lacy, January 17th, 1878.....	56 00
One Transaction sold, " " " " " ".....	50
Membership fees taken by A. W. Sias.....	7 00
Received for postage on reports.....	65
Total.....	\$81 70
Paid C. Y. Lacy, January 17th, 1878.....	\$32 75
Paid J. T. Grimes, " " " ".....	2 65
Balance in treasury " " " ".....	46 30
	\$81 70

Respectfully submitted.

A. W. SIAS,
Treas.

REPORT OF SECRETARY.

The Secretary made a verbal report, which was accepted, when it should be put in writing. The following is the report:

Mr. President and Gentlemen:

Your secretary has but a brief report to make.

No meetings of the executive committee have been held since the adjournment of the last annual meeting of the society.

The action of the society at the last meeting, giving to those who should become members copies of the Transactions from the beginning of their publication, was not thought prudent at the time, but it has been found to work well, and the continuance of the rule is recommended.

The membership of the society was about the same for 1876 as for 1875, and larger than at any time previous to the latter year.

Considerable difficulty was experienced in preparing a programme for the present meeting. Many members of this society are much like farmers in general in their reluctance to write a letter, even in reply to letters of business demanding immediate attention. They are also very modest about accepting the honor of preparing papers and opening discussions.

The treasurer's report shows the finances of the society to be in a flourishing condition. The expenses of the secretary's office for the past year, have been as follows:

Letter postage and postal cards.....	\$ 3 94
Preparing Transactions for printer.....	4 70
Writing postal cards.....	42
Postage on Transactions.....	5 67
Wrappers for ".....	47
Express on ".....	1 55
Labor mailing ".....	1 50
Postal cards.....	2 00
Printing same.....	1 50
Printing railroad passes.....	1 50
Postal cards.....	2 00
Printing same.....	2 00
Printing membership tickets.....	1 50
Programmes of meeting.....	2 50
Telegrams.....	1 50
Total.....	<u>\$32 75</u>
Adding to this amount express and postage on Centennial Diploma and Medal.....	2 65
Gives the total expenses of the society for the past year.....	<u>\$35 40</u>

It was moved and seconded that at the close of the meeting orders be drawn on the Treasurer to meet all expenses of the society to date.

ELECTION OF OFFICERS.

The Society then proceeded to the election of officers, with the following result:

President—Truman M. Smith, of St. Paul.
 First Vice President—J. S. Harris, of La Crescent.
 Second Vice President—Ditus Day, of Farmington.
 Third Vice President—U. S. Hollister, of St. Paul.
 Secretary—Charles Y. Lacy, of Minneapolis.
 Treasurer—A. W. Sias, of Rochester.

WISCONSIN DELEGATE.

A. J. Phillips, Esq., presented credentials as delegate from the Wisconsin State Horticultural Society. He was received by vote and a vote of thanks tendered for his attendance.

The election of the remaining officers was postponed until the afternoon, and the Society adjourned to meet at 1:30 P. M.

THURSDAY AFTERNOON.

FORESTRY LAWS.

The meeting was called to order by the President at 1:30 P. M.

It was moved and seconded to take from the table the report of the committee on Congressional Tree-planting, and other Forestry Laws. The motion carried.

A motion was made and seconded to reconsider the action of the Society taking up the report section by section. The motion was carried.

A motion was made and seconded to endorse the action of the State Forestry Association on the Congressional Tree-planting Act and to adopt that part of the report relating to House bill 1,218. (See page 84.)

MR. PEARCE'S PAPER.

Mr. Pearce was called on to read his paper, after which a vote of thanks was tendered and a copy requested for publication.

The following is the paper in full:

PLANTING AN ORCHARD.

Mr. President, and members of the State Horticultural Society of Minnesota:—It is now over twenty years since I first began to set fruit trees in Minnesota, and like all fruit growers of the state, I have met with many reverses and disappointments, and it is only within the last few years that I have met with anything like success, and that with but few varieties.

My experience teaches me that in order to make fruit growing a success, much depends on location, soil, its thorough preparation, and cultivation, and general care of the trees.

Location.

Location should be high, dry, rolling land, with a heavy, firm and moderately rich soil with a subsoil sufficiently porous to give perfect drainage in a few hours.

Soil.

Fruit trees, especially standards, can not live in wet, sticky, sour land, of which large amounts are to be found in this and adjoining states. Permanent success in apple raising on the most of our soils depends largely on the amount of trenching and ditching done previous to setting the trees; and good cultivation for several years afterwards, or at least till the trees are in good bearing condition, is the best possible practical protection against drouth and root killing. A want of proper drainage about the roots of fruit trees, in my opinion, is one of the principal causes of root killing. When freezing in such a condition, the ground heaves and cracks, loosening the roots of the trees and exposing them to the air; which is fatal.

In portions of the country where the land is low and inclined to be a little wet and sticky, good drainage for fruit trees can often be had by digging down a few feet, till a porous substance is found, and filling with small stone within three feet of the top and the balance with good soil, and setting the tree in the centre, a little deeper than it stood in the nursery.

Trees.

As a general rule, small fruit trees are not satisfactory in Minnesota to nursery men or those that buy them. When suffered the second year to branch from where they ceased growing the previous year, the branches are too near the ground, and the only remedy is to cut them off; which is always injurious to the tree, by exposing the sap cells to the air, which is very apt to produce black heart. After experimenting for a few years by cutting a part of my yearlings to the ground, and applying grafting wax, and allowing one bud to grow from the graft, which at the end of the growing season will be from three to four feet high, tapering like a whip stalk, as straight as a candle, I consider such trees the very best to set in orchard. They will branch at the proper height, and make beautiful trees. I am so well pleased with the experiment that I intend to cut all my yearlings down to the ground in the spring. This also saves a world of trimming and stripping of leaves.

Varieties.

It is a mistake and a great detriment in fruit-raising in Minnesota for the farmers and others to set out such a large variety of fruit trees, when it is well known by nurserymen and others, that there are but three varieties of standard apples in the state that have been thoroughly tested and are known to be reliable, namely, Tetofsky, Duchess and Wealthy; all good apples, summer, fall and early winter. If those three varieties were set out in large quantities in the state, and no others, with the exception of a few crabs where standard apples will not live, and leave new varieties to amateurs and nurserymen, it would be but a few years till we would have all the fruit we could use, and more too.

Nurserymen and tree-peddlers should regard the wants of the country more and their own private interests less, and never sell a tree which they have good reason to believe will not give good satisfaction. In so doing, confidence will be established in the minds of the people and the nursery business will be placed on a more permanent basis.

Seeding and Cultivation.

There may be places where fruit trees can be set out and the land seeded at once to grass or Timothy, and the trees grow and do well, but I am quite sure that place cannot be found in Minnesota. It should be borne in mind that our air is naturally dry, and our location subject to extreme drouths during the summers and early part of the falls, which have killed thousands of fruit trees, regardless of varieties, where the orchards have been neglected or seeded down to timothy. During the protracted drouth of last summer, I visited, I might say, scores of young orchards, and in every instance where they were cultivated, the trees were healthy and in a good growing condition, regardless of the drouth. But those that were neglected, or seeded to timothy, were invariably unhealthy, and often in a dying condition.

If you expect fruit trees to grow, remain healthy, and in due time yield their fruit in a ripe condition, you must give them the same cultivation that a skillful farmer gives his corn and potatoes. Anything short of this, taking one year with another, will result in failure. There is a false doctrine advocated by many, that fruit trees should not be cultivated, on the ground that it prevents the wood from ripening up in the fall. A little careful thought on this subject will convince the most skeptical that it is all wrong. Cultivation produces growth, health, quantity and quality, but the time of ripening is the same with the tree, potato and corn, with the exception of soil and location. There is no use of losing the use of land where fruit trees are set sufficiently far apart to plant between the rows with corn, potatoes, or any hoed crop.

Crab Apples.

Never grow apples and crabs together, on account of the latter's blighting and spreading to other varieties that are not predisposed to blight.

The crab apple is a substitute for the standard apple, on soils and locations where standard apples fail, such as very rich vegetable soil, locations very much exposed, level and inclined to be wet, very sandy, etc. To meet such soils and locations, several new varieties of crabs have recently been brought to the front, all possessing more or less merit, but I doubt very much whether any of them possess the merit of the well known Transcendent, which, with all its blight, has produced more good fruit than all the rest put together.

Cracked Bark.

In this and several of the northern states, it is not an unusual thing for the bark on fruit trees to crack near the ground, the south side of the tree to blister or become injured, also the forks and other parts of the tree, all of which is, without doubt, the result of the freezing and thawing of the sap at improper times. In former years, those blemishes or injuries on fruit trees annoyed me

very much, but of late years, I have made it a business as soon as discerned, to heal or cure them right up, which can be done in the growing season as easily as a cut or bruise in the flesh. It is simply this: With a sharp pruning knife, remove all the diseased parts to sound, healthy wood and bark, and then apply a good coating of grafting wax, melted, quite warm, with a brush. Keep the wax on till all is healed.

The wax is made as follows: Two pounds resin, one pound beeswax, third of a pound mutton tallow or Venice turpentine; first melt the resin, then add the beeswax, and last the tallow or turpentine; when melted, pour into a pail of water and pull and work like taffy.

Mulching.

It is said that an ounce of preventive is worth a pound of cure. On this principle mulching is introduced. It is a preventive in the broadest sense, when properly applied and at the right time. It should be administered at any time during the growing season at the approach of extreme heat or drouth, and removed when the danger is over. Mulching should also be applied late in the fall or early in the winter, after the ground is well frozen, to prevent it from thawing out during the winter or too early in the spring, and thus keep back the flow of sap till the danger of freezing is over in the spring.

Propagation.

In conclusion of my scattering remarks, I wish to say a few words about nurserymen and what they are doing, also about windbreaks around orchards and buildings. Nurserymen have done a good work in producing hardy fruit trees for Minnesota. But still they are far from being satisfied. They are putting forth their best efforts to produce fruit trees that will not root-kill. They are experimenting in various ways to accomplish this end, some with short roots and long scions, striking root from the scion; some are planting crab seed and using crab stock to graft on. E. Wilcox, of Trempeleau, Wisconsin, goes still farther; he uses crab stocks, grafts with known crab scions, and when those are two years old, buds into the branches with standard apples. All of the above plans may possibly make the roots more hardy, but from a philosophical standpoint, I have my doubts whether anything is gained by using crab stock. Long scions with short roots, set deep in good fruit soil, worked deep, ditched if necessary, and the trees kept well cultivated, as a general rule, will strike root from the scion, and the fruit trees will be the same variety, root and branch, on which I doubt if there can be any improvement to make them more hardy.

For winbreaks, set out four or five rows of Scotch pine seedlings, about five feet apart, from six to nine inches high, around your orchard and buildings, at a cost of about twelve dollars per thousand, cultivate well, and in a few years you will have a windbreak that is a windbreak.

DISCUSSION.

Seeding Down.

Mr. Fox. I know of an orchard that was sown to oats three years in succession and then seeded down. It has never been culti-

vated since and the trees have never been pruned. The trees have done well, having lived through the winter of 1872-3.

Mr. Pearce. The trees must be cultivated while young.

Mr. Jordon. I never knew a large planter that was successful in seeding. Can point to cases in which seeding down has been successful, but the general recommendation should be to cultivate. It is true that some orchards in grass came through the winter of 1872-3 better than those that were cultivated.

Mr. Elliot. Mr. Whitney has his orchard in grass, and has better success than others, but he cuts the grass and uses it to mulch the trees.

Mr. Mason. Some trees ought to stand in grass, while others are killed by it. The Duchess is one of the latter, while the Transcendent set in sod is healthy, thrifty and little subject to blight. In Fillmore county there is an orchard, a part of which is used for garden and part in sod. In the former the trees are two or three times as large, but the branches are killed by blight, while in the latter the trees are comparatively free from blight. Have wondered why fruit trees are not divided into two lists, one for cultivation and one for standing in sod.

President Smith. J. J. Thomas says if the trees make a great growth cultivate, but not late in the season. The cause of death in 1872 and '73 was late growth and the sudden cold weather. Trees came through in 1864, though it was much colder. Should cultivate not later than July 1st.

Mr. Harris. The dryness of the ground was another cause of the destruction of trees in 1872 and 3. It was so dry at my place that we dug six feet without finding moist earth.

President Smith. There was plenty of water in the soil at St. Paul.

Mr. Hall. It is a good plan to mulch with flat stones. Cover the roots with dirt and then put on the stones and then some more dirt.

Mr. Sias. I approve of that.

Mr. Harris. That is no doubt the place for the stones rather than under the tree.

Mr. Hart. I doubt the value of stones around the trees in Minnesota.

Mr. Pearce. One year with another I think it safer to cultivate than to seed down.

Mr. Hart. I find that where I cultivate the tree ripens its wood earlier than where I do not.

Mr. Hollister. Down in Southern Wisconsin and Northern Illinois it is a common practice to seed the orchards to clover for three, four or five years, then to plow up, grow a crop of buckwheat, and seed down again.

Mr. Jordon. It is safer to recommend cultivation than seeding down, because the trees are less likely to be neglected.

Pruning.

———. I have killed wild plums by pruning them from the middle of May to the middle of June.

Mr. Hart. I have done the same.

Mr. Jordon. I have pruned in grafting without injury, but that is before the sap starts.

Mr. Hall. I pruned my trees last spring and they made good growth.

Mr. Cotterell. I have pruned and my trees have not been injured by it.

Mr. Jordon. Late pruning is what does the harm.

MR. HARRIS' FRUIT REPORT.

Mr. Harris was called upon for his general fruit report.

The report was read, accepted, and ordered on file for publication. The report was as follows:

REPORT OF GENERAL FRUIT COMMITTEE FOR DISTRICT NO. 1.

Strawberries.

In the first district the fruit crop of 1877, was generally considerably below the average, and some kinds were an entire failure. Beginning with the season, strawberries apparently came through the previous winter in good condition. They blossomed and set fruit in a style that was almost marvelous, but from some cause or combination of causes much less than the usual quantity came to maturity, and the berries were generally of an inferior quality—small, hard and seedy being the prevailing type and but very few really large and fine berries among them.

Who knows the cause of this? I must confess I do not. (Just previous to the time of ripening on my grounds the chinch bugs were very numerous, literally covering the base of the plants.) I do know that the better the soil the more the failure, and the best berries that I saw during the season were grown in a bed composed of sand and gravel liberally mulched with marsh hay.

Raspberries.

Black cap raspberries were injured considerably by the severity of the previous winter but blossomed and set a fair quantity of fruit, but before ripening most of the bearing canes were apparently struck with a blight and in a few hours the half grown berries had blackened and withered, thus ruining the crop. I think the yield of fruit was less than five bushels per acre. With the reds the Philadelphia froze mostly to the snow line and fruited but little. The Turner was not very much hurt by the winter and was well loaded with fruit, but alas! the birds had found out their good quality and claimed the whole. We could not yield to their claims very cheerfully and fought desperately for our rights, but powder and shot did not seem to diminish their numbers, and we retired from the contest, leaving them the whole crop.

Currants.

Currants—there were none in all this region; apples, cherries, and plums the same, or nearly so. Crabs and Siberians produced perhaps one-fifth of a crop.

Grapes.

Grapes did not exceed one-half crop but the quality of the fruit was superior.

Now the question arises, will this unfavorable result of the year be set down against Minnesota as a fruit state, and discourage or deter our farmers from planting orchards or fruit gardens? I trust not. According to reports received, other states and sections of our country have done but little better. When our wheat or other crops are a partial failure do the people attribute the fault to the state, or in any wise discontinue the planting of wheat and other grain? Neither should they give up the planting of trees and vines, but rather should study and investigate the cause of the failure, that in the future they may be able to somewhat guard against or prevent a like occurrence.

Apples and Crab Apples.

Doubtless the extraordinary crop of 1876 had much to do with the short crop of the apples and crabs. The trees were greatly enfeebled by maturing so much fruit, and after the fruit was harvested had not time to recruit up and get in good condition to endure a Minnesota winter, and the wonder really is that so many have survived and still live to give promise for the future. I remember that when gathering fruit in the fall of '76 we found the elasticity of the wood gone and even the branches of the so-called *iron clad* Siberians would snap like dry sticks, and the wood looked sick and used up. The great thaw and continued warm weather of the latter part of winter, followed by zero weather in March, by injuring the vitality of the fruit buds that were to give the year's crop, was probably an assisting cause but not the principal. One lesson taught here is do not let the trees in young orchards over bear. Our most severe losses of trees have invariably followed a season of excessive fruitfulness. The same causes will account for the meagre crop of cherries and plums last year. From conversation held with a number of fruit men I am led to believe that the failure of currants is generally attributed to the late May frost, but on my grounds that cannot be,

for they had failed to blossom or set any fruit to be injured, and the frost was so slight that tomato plants and early cucumbers recovered from its effects. If the weather had anything to do with it I must attribute it to the February thaws and March freeze, or to the snow storm of April 27th and 28th, and likewise the failure of the black caps may be partly attributed to the above causes.

Our grape vines were wintered better and the short crop cannot be charged to any of these causes, as they did not start early enough to receive injury. In the early spring our hopes of a large crop were very sanguine, therefore we were not watching them with due vigilance, and the little steel blue bud borer caught us napping, and in a very short time had stripped the vines of two-thirds of their buds. We have promised ourselves to watch for the little scamp this coming spring and try to head him off.

No new varieties of apple, or other fruits, have come out as candidates for favor in the last year.

Our trees and vines generally ripened up the seasons growth well, and have entered upon the winter in good shape to endure a hard winter, and the soil was so thoroughly wet that there is but little danger to be apprehended from root-killing.

La Crescent, Minn., January 14, 1878.

JOHN S. HARRIS.

DISCUSSION.

Mr. Hall. I had Philadelphia raspberries on the side of a ditch well mulched, and got a good crop.

Mr. Perry. I have a currant that ripens its fruit much later than other varieties.

Mr. Pearce. I am sure of injury to trees from overbearing. Unless we remove a portion of the fruit we must give more manure. It is well to bear this in mind, as we are apparently going to have a great crop another year.

Mr. Sias. I cannot endorse the shooting of birds recommended in the report. I think they were entitled to all the fruit there was last year.

President Smith. As to overbearing, I picked fruit, while green, from several trees in 1876, and these were the only ones that bore in 1877. They bore well. I had but a few currants and those were of the Prince Albert variety. Prince Albert, Victoria and — are the best red varieties.

Mr. Elliot. From two acres last year I got fifteen bushels. The ground was heavily mulched the fall before; the crop was best where the mulching was done latest, and poorest where mulching was lightest. Mine are mostly Red Dutch.

ELECTION OF OFFICERS CONCLUDED.

The society here resumed the election of officers.

For executive committee the secretary was successively directed to cast the ballot for the following:

M. Pearce, Rochester.

Wyman Elliot, Minneapolis.

George W. Clark, Winona.

O. F. Brand, Faribault.

William E. Brimhall, St. Paul.

The president and secretary are members ex-officio.

DELEGATES TO THE MEETING OF THE STATE AGRICULTURAL SOCIETY.

The following were elected successively:

Wyman Elliot, Minneapolis.

O. F. Brand, Faribault.

B. F. Perry, Rochester.

President Smith, St. Paul.

Dr. Twitchell, Chatfield.

A motion was made and seconded to empower this committee to fill any vacancies by the appointment of members of the Horticultural society. The motion was carried.

COMMITTEE ON LOCAL SOCIETIES.

The committee on local societies, through its chairman, Prof. Lacy, reported that nothing had been accomplished, and asked to be discharged.

Mr. Harris. I believe that local societies ought to be organized for the distribution of information on horticultural subjects. For instance: there is great ignorance on the subject of injurious insects. Such societies should have cabinets of insects, birds, and other horticultural products, and books. We want collections of insects to show which are injurious and which are harmless, and collections of birds to show which to protect and which to destroy.

Mr. Harris' speech was quite animated, and by the vote of the society he was requested to prepare a copy for the Transactions and for the papers.

The committee was discharged and a new committee appointed consisting of Messrs. J. S. Harris and A. W. Latham.

General Grant (again).

Motion was made and seconded to reconsider the action by which General Grant was recommended for general cultivation.

Motion carried, 7 for and 3 against.

Motion was made and seconded to recommend General Grant "for general trial."

Motion carried, 8 for and 5 against.

Seedling Grapes.

Mr. Kramer's report on Seedling Grapes was then read by the Secretary, after which it was ordered to be received and published in the transactions.

The report was as follows:

Mr. President and Gentlemen of the Horticultural Society:

I have tried for fifteen years to raise seedlings of the grape. The first three of the Concord made me wait ten years for fruit, and none of them can I recommend, because they are not good enough for me. I made another attempt with the Delaware, which has led to some result. That produced the handsome Beauty of Minnesota. According to present prospects it will remain the Beauty. It was produced in this wise: I took one of the largest bunches of the Delaware and tied it up with a bunch of the Concord so that the blossom would mingle and bees carry the pollen, and thus the cross was accomplished. Seed from this union brought fruit the third year. Three vines have now borne for seven years. At first the fruit was small, to be sure, but every year it has grown larger and better.

After the first years growth from the seed, I planted in places, spaded about a foot and a half deep and three feet in diameter. The next year I spaded the remainder of the ground, leaving untouched that which I spaded the year before. Thus without disturbing the roots giving them a chance to spread.

For protection I have done but little, but have made some experiments. Have covered with earth, but that is an injury because it destroys too many fruit buds. Covering with brush, or simply pulling up the stakes and laying them down is better. Sorghum stalks are the best of all things because they are heavy and hold the snow, and because mice do not like them.

For pruning grapes there are many methods, and each man thinks he has the cat, in his favorite, when he hardly has hold of the tail.

J. C. KRAMER.

DISCUSSION.

Mr. Harris. I have seen this grape and tasted it. Mr. Brand says it is a seedling of the Delaware. It is about as good as the Delaware, in size a little larger. It is prolific and bears like the Delaware. The color is white and the season about that of the Concord.

Dr. Twitchell. I cover my grapes with corn stalks.

President Smith. I cover with earth.

REVISION OF GRAPE LIST.

Concord.

Motion was made and seconded to recommend the Concord "for general cultivation."

Motion carried unanimously.

Delaware.

Motion was made and seconded to recommend the Delaware "for general cultivation."

Motion carried unanimously.

Janesville.

Motion was made and seconded to recommend the Janesville "for general cultivation."

Mr. Cotterell. I had a vine that proved itself worthy and was afterwards called the Janesville. It climbed twenty feet high in the trees, and I do not pretend to cover it. The fruit is sweet, and has been pronounced better than the Concord. It is of the color of Concord but not so large. Not so sour as the Clinton. Have had it for fifteen years.

Mr. Harris. It is probably not the Janesville, as that was only distributed in this State in 1870, and the fruit described is larger and better than the Janesville. Think it not safe to recommend the Janesville for general cultivation, as the vines generally prove feeble growers.

Mr. Jordon described a circumstance indicating that the Eumelan had been mistaken for the Janesville.

Mr. Pearce. The Concord has proved a failure in Southern Minnesota for general planting. The fruit of the Janesville is pronounced first rate by competent judges. The wood is short jointed and ripens or hardens as it grows.

President Smith. There are evidently two or three kinds supposed to be Janesville. Mr. Knaupheide has the Janesville and likes it, but his buyers did not want it a second time. (In answer to questions) I sent the first grapes that were shipped from Minnesota to New York. In 1877 sold 2,850 lbs in the St. Paul market at an average price of 17½ cents. Grapes have not failed to ripen with me for seventeen years. The Delaware has ripened about Sept. 1st. The fruit ripened first on the highest ground. Have not girdled the vines or used other devices to hasten the ripening. This

year the Iona ripened as soon as the Delaware, which it has not done before. Think the bad reports of this variety are owing to weakness of the vines caused by faulty propagation. It is of the Concord type, the leaf large, and white underneath. I protect all my grapes. Have a seedling of Dr. Sylvester's, which he has sent me for trial. It is very promising; the fruit keeps till April.

Mr. Cook. I purchased 50 vines of the Janesville and have been much pleased with it, but the vine is not so hardy as represented. The fruit I like very much. It is a little smaller than the Concord. A sweet grape. Better than the Concord for this section.

Mr. Pearce. Mr. Dewey reports that he has grown the Janesville for seven years and has not taken from the trellis, and has taken 50 pounds of fruit per vine.

Mr. Mason. Have visited the Janesville in several places. The vines have been hardy enough to remain on the trellises and Mr. Jewell claimed the fruit to be good. Wherever grown the fruit is liked and the vine perfectly hardy. Farmers give their vines no attention father than to put on the trellis. Hardiness, then, is the first question. The Janesville should be put on for general cultivation and its qualities stated.

(Here Mr. Hall asked leave to call attention to some pop corn on exhibition. He said it was not only very excellent for popping, but ground into meal it made a mush that was very delicious, tempting to the appetite even of a sick person.)

Mr. Porter. What we are calling the Janesville is the Connecticut seedling. The former name is a misnomer. If there is a Janesville it is good for nothing. The Clinton is a much abused variety. Trained to trellises five feet high it ripens as early as the Concord.

Mr. Cook. I think Mr. Porter has the Connecticut seedling instead of the Clinton.

Mr. Jordon. There is no doubt but the Janesville is different from any other variety—is distinct.

The motion to recommend for general cultivation was withdrawn.

Hartford Prolific.

Motion was made and seconded to recommend "for planting in limited quantities."

Motion carried, 8 for and 1 against.

Clinton.

Motion was made and seconded to recommend "for planting in limited quantities."

Mr. Porter. When thoroughly ripe the Clinton is a good grape—No. 1. I should want it to hold a better place on the lists.

Motion carried, 11 for and 1 against.

Roger's No. 15 (Agawam) and Northern Muscadine.

Placed on same list by unanimous vote.

Eumelan.

Placed on same list by a vote of 8 for and 1 against.

Iona.

Mr. Latham. It bears a large crop uniformly, but is rather late—does not alway ripen. But even when half ripe it is as good as a ripe Concord.

Mr. Porter. I never saw a ripe Iona.

President Smith. I have had them from the 1st to 15th of September. Mr. Knaupheide had them also. It sets too much fruit to ripen in good time.

Mr. Sias. Mr. Porter correctly represents our experience with the Iona here.

Mr. Latham. Every one buys Iona vine sunless talked out of it.

Motion was made and seconded to recommend "for trial."

Motion carried, 9 for and 1 against.

Janesville (again.)

Motion was made and seconded to continue recommended "for trial for its earliness."

Motion carried by unanimous vote.

Rogers No. 4 (Wilder), No. 9 (Lindley), and No. 19 (Merrimack.)

Motion was made and seconded to recommend "for trial."

———. I have them and any one is welcome to them who will take them away.

Mr. Latham. That is not my experience. Any one can have mine by paying a good price for them.

President Smith. I have but a few of No. 9, but wish I had more. They sold for 25 cents last year with the Concord at 8 to 10 cts. (Specimens of this and No. 4 were exhibited on the table.)

Mr. Harris. I have thought No. 19 better than No. 15.

The motion was carried by unanimous vote.

Motion was made and seconded to close the grape list. Carried.
The meeting then adjourned to meet at 7:30 P. M.

THURSDAY EVENING.

The meeting was called to order by the President at 7:30.

STRAWBERRY LIST.

The strawberry list was taken up for revision.

Wilson's Albany.

Motion was made and seconded that the Wilson stand recommended "for general cultivation."

The motion was carried unanimously.

Countess de Haricourt.

Mr. Elliot. The berry is of a light color and has a fine aroma. Wm. Lyon, of Minneapolis, marketed \$1,500 worth, at 13 cents per quart, last season. It is a French variety.

President Smith. Countess de Haricourt is larger but less regular than Downer's Prolific.

Mr. Cook. I could see no difference between them growing side by side.

Mr. Elliot. I would as soon believe the berry I allude to one as the other, but at all events it is a good one.

Charles Downing.

Mr. Smith. The Downing keeps up its size through the season better than the Wilson.

Mr. Harris. The Downing was the best last year.

Seth Boyden.

Mr. Cook. Am no great friend of the Wilson. There are several that are better for me. Seth Boyden is one of them.

President Smith. Had only a few of those last year, but they were very fine.

Mr. Cook. (In answer to question) Seth Boyden does fairly alone, but does better with others.

Downer's Prolific.

Mr. Harris. Downer's Prolific is the best berry for the farmer. It is five times better than Wilson for the table, and bears as much, taking the whole season.

Mr. Mason. The Wilson is the poorest berry on the list. I move to place Downer's Prolific at the head of the list "for general cultivation." The motion was seconded.

Wilson's Albany (again).

Mr. Elliot. I can pick out more successful beds of the Wilson than of any other variety. There is more of it in market. It is reliable.

President Smith. The Wilson will bear transportation. Downer's Prolific can't be shipped to St. Paul and be valuable when it gets there. There is no other known berry that will bear shipping and sell there as the Wilson does. I have seen this fact proved on the market there.

Mr. Mason withdrew his motion.

Motion was made and seconded that the classification of strawberries be so changed that the purpose for which recommended shall follow the name of each variety. The motion was carried.

Downer's Prolific and Charles Downing (again).

Motion was made and seconded to recommend "for general cultivation for near market and home use."

Motion carried unanimously.

Seth Boyden (again) and Green Prolific.

Motion was made and seconded to recommend for same purpose.

President Smith. The Green Prolific belongs there but the Seth Boyden has not been tested enough. With me it has not been prolific enough for that place.

Mr. Cook. Seth Boyden is one of the best both in yield and flavor. The judges at the Centennial Exhibition reported it as one of the sweetest and best there. I can endorse that judgment. Mine are growing on a dark sandy loam.

President Smith. Our differing experience shows that it is not fit to recommend for general cultivation.

Mr. Hart. I agree with what Mr. Cook says of it if planted with the Wilson or Boston Pine.

Mr. Cook. It does best on clay loam and is better when fertilized by other kinds, but that is not necessary.

It was voted to act upon one variety at a time.

The vote being taken on Seth Boyden the motion was lost; four for and seven against.

The vote being taken on Green Prolific, the motion was carried; eight for and one against.

Motion was made and seconded to recommend Seth Boyden for trial.

Motion was carried by unanimous vote.

Col. Cheney and Kentucky.

Recommended "for trial" by unanimous vote.

Michigan Seedling.

Motion was made and seconded to let stand recommended "for trial."

Motion carried, 6 for and 1 against.

Prouty's Seedling.

Mr. Hart. Think it was through Mr. Bates recommendation that this variety was recommended for trial. I do not suppose he ever raised a hundred quarts of it. Would, however, keep it on trial.

A motion to that effect was carried by unanimous vote.

Countess de Haricourt (again.)

Motion was made and seconded to recommend "for general cultivation for near market and home use."

Mr. Cook. Better to put it on trial, for if it is not the same as Downer's Prolific we do not know it.

Mr. Hart. If it is the same no one will be hurt by putting it on the same list.

Motion carried unanimously.

Crescent Seedling.

This variety was inquired about but no one could give any information.

Cumberland Triumph.

Mr. Cook. I have not fruited sufficiently to say anything about it.

Champion and Monarch of the West.

President Smith. A year ago last winter the Champion stood with me without protection. It was the hardiest of all, a pistillate variety. The Monarch of the West killed out entirely.

Cinderella.

Inquiry was made concerning this variety, but no one had tested it.

Great American.

Mr. Cook. I have plants of this variety. They have survived one winter, but have not fruited.

Mr. Hart. I like its growth, but have not fruited it much. I like it as far as I have seen it.

Hart's Seedling.

President Smith. I received some plants in 1876. Last year I set five rows and they grew well; got some fruit from the old vines; have seen the fruit several times and think it is not excelled.

Mr. Elliot. I also received plants in 1876. Last spring I found two plants alive, and these grew well. I have seen the fruit, and its appearance recommends it, but it does not handle like the Wilson; it handles, however, somewhat better than the Charles Downing.

Mr. Hart. Mr. Elliot has described it well. It bears better than the Wilson, and the fruit is better, but there are kinds with still better fruit.

Mr. Harris. I received ten vines in midsummer, and they all lived. I transplanted some the following spring, and these bore the same season. I move that a committee from Rochester be appointed to visit Mr. Hart's strawberry next summer, and that other members of the society be invited to accompany this committee. The motion was seconded and carried and Messrs. Cook, Sias and Mason appointed such committee.

Ida.

Mr. Hollister. I saw the *Ida* at Mr. Kenney's last summer and he said he could get more money from this variety than any other.

President Smith. The fruit is too small and too acid.

Mr. Harris and Mr. Cook concurred in these objections.

It was voted to close the discussion on strawberries.

RASPBERRIES.

Doolittle—Seneca.

The *Doolittle* and *Seneca* were ordered to stand recommended "for general cultivation."

Ontario.

The *Ontario* was ordered to stand recommend "for trial."

Philadelphia—Turner.

The *Philadelphia* and *Turner* were ordered to stand recommended "for general cultivation" for red varieties.

Purple Cane.

Some one inquired concerning this variety.

President Smith. The *Purple Cane* is worthless.

Mr. Jordon. I have received \$120.00 for the product of one half acre. I move it be recommended "for general cultivation." The motion was seconded.

The motion was lost by a vote of 5 for and 10 against.

CATALOGUING FRUITS, &c.

The report of the committee on cataloguing fruits and shade and ornamental trees and plants was called for.

Mr. Elliot, after stating the difficulties and disappointments, read the report which he had prepared.

A motion to receive and adopt was seconded and carried.

The following is the report:

Evergreens.

We will first notice the evergreen family, a type of special importance to all persons who are interested in ornamenting and adorning their farms and homes or public grounds.

This class is highly valued for wind breaks and screens, as well as for ornamenting our yards and lawns. When judiciously used, they form a pleasing contrast to deciduous trees, in winter, their foliage bedecked with hoar frost sparkling in the dazzling sunlight. The objection of some, the many losses that attend their transplanting, is almost entirely due to manner of handling. Their roots are very sensitive, and cloudy, moist weather should be selected for transplanting. With digging and planting well done, the after care is but little. Mulch well with coarse litter, straw, chip dirt, sawdust, or whatever will protect the roots from the scorching rays of the sun.

[NOTE—Never use manure around the roots in planting.]

F. R. Elliot, in his work on landscape gardening, states, first that in removing and transplanting evergreens they should have bolls of earth attached; and second, they should only be moved at certain seasons of the year. But those who practically and theoretically understand the evergreen tree or plant, can move them at any time when the ground can be worked freely, except the months of July and August, in all our latitudes from above 43° to 40°; below that, June and September must be included with July and August. In transplanting, it is only requisite to remember that the tree has its leaves on, and that there is, consequently, a constant demand upon the roots for evaporation by the leaves, and therefore it will not do to permit them to get dry. With small sized trees, a root nearly corresponding with the top, is generally procured, and when the trees have been rightly grown in the nursery, cutting in of the top is unnecessary. But in case of the removal of trees six feet or more in height, unless extraordinary care is taken, a great reduction of the root is the result, and then it is always advisable to shorten in the length of the branches corresponding with apparent loss of roots the tree has sustained.

We would recommend for general planting the following varieties:

1. White Pine (*Pinus strobus*.)
2. White Spruce (*Abies alba*.)
3. Balsam Fir (*Abies Balsamea*.)
4. Scotch Pine (*Pinus Sylvestris*.)
5. Austrian Pine (*Pinus Austriaca*.)
6. Rest or Norway Pine (*Pinus resinosa*.)
7. Arbor Vitæ (*Thuja occidentalis*.)
8. Norway Spruce (*Abies excelsa*.)
9. Siberian Arbor Vitæ (*Biota Wareana*.)
10. Red Cedar (*Juniperus Virginiana*.)
11. Black Spruce (*Abies Nigra*.)
12. Mountain Pine (*Pinus pungens*.)
13. Common Juniper (*Juniperus communis*.)
14. Savin Juniper (*Juniperus Sabina*.)
15. Tom Thumb Arbor Vitæ (for trial.)
16. Ground Hemlock (*Taxus Canadensis*.)
17. Hemlock Spruce (*Abies Canadensis*.)
18. Yew (*Americana Canadensis*.)

Deciduous Conifers.

American Larch or Tamarack. (*Larix Americana*.)
European Larch. (*Larix Europea*.)

This class of trees need to be taken up very early in the spring, and immediately planted with as little exposure to the sun and wind as possible in order to insure success.

Deciduous Trees.

Deciduous trees, those whose leaves fall in autumn, are more largely planted than any other on the western prairies, for shelter, belts and windbreaks. The fastest growing varieties are usually selected, while the slowest growers and consequently the longest lived *should* claim the greatest attention. A few quick growing kinds for immediate use should be planted in all collections.

As a class, these trees with their ever varying tints of green and yellow foliage often contrasted with the evergreen add much of beauty and variety to the scenery. The care bestowed on digging, planting and cultivating trees of all classes, is of vast importance to the present as well as future generations, and we can but commend the action of our State Forestry Association in telling the people what and how to plant, and what protection, care and cultivation to give. The most of the following varieties are easily obtained, either in the forests or nurseries of our state :

Sugar or Rock Maple. (*Acer saccharinum.*)
 White or Silver Maple. (*Acer dasycarpum.*)
 Red Maple. (*Acer rubrum.*)
 Box Elder, Ash-leaved Maple. (*Acer negundo.*)
 White Ash. (*Fraxinus Americana.*)
 Green Ash. (*Fraxinus veridis.*)
 Black Ash. (*Fraxinus sambucifolia.*)
 Blue Ash. (*Fraxinus quadrangulata.*)
 Mountain Ash. (*Pyrus aucuparia.*)
 Prickley Ash. (*Xanthoxylon Fraxineum.*)
 Abell, White Poplar. (*Populus alba.*)
 Cottonwood. (*Populus monilifera.*)
 Angled Cottonwood. (*Populus angulata.*)
 Balm of Gilead. (*Populus candicans.*)
 Lombardy Poplar. (*Populus dilatata.*)
 Basswood. (American Linden.) (*Tilia Americana.*)
 White Birch. (*Betula alba.*)
 Paper or Canoe Birch. (*Betula papyracea.*)
 Butternut. (*Juglans cinerea.*)
 Black Walnut. (*Juglans Nigra.*)
 Hickory. (*Carya.*)
 White Elm. (*Ulmus Americana.*)
 Slippery Elm. (*Ulmus fulva.*)
 Hackberry. (*Celtis occidentalis.*)
 Hornbeam, Ironwood. (*Ostrya Virginica.*)
 Kentucky Coffee. (*Gymnocladus Canadensis.*)
 Locust. (*Robinia pseudacacia.*)
 Black Cherry. (*Cerasus Virginiana.*)
 Bird Cherry. (*Cerasus Virginiana Capollin.*)
 White Willow. (*Salix alba.*)

Deciduous Ornamental Shrubs.

Deciduous ornamental shrubs do not claim the attention due to them as a class. A few dollars' worth planted in conspicuous places about the grounds add much to their attractiveness, and by a judicious selection of varieties, a succession of bloom and variety of foliage may be had throughout the season. The following list comprises nearly all the most desirable hardy shrubs cultivated in the state:

Rose Acacia, Moss Locust (*Robinia hispida*.)
 Barberry (*Berberis*.)
 Buffalo Berry (*Shepherdia argentea*.)
 Flowering Currant (*Ribes aurea*.)
 Hyderangea (*paniculata grandiflora*.)
 Honeysuckle (upright) (*Lonicera Tartarion*.)
 Lilac (*Syringa Vulgaris*.)
 Purple Fringe (*Rhus Cotinus*.)
 Japan Quince (*Cydonia Japonica*.)
 Snow Berry (*Chiococca*.)
 Strawberry Tree or Burning Bush (*Euonymus atropurpureus*.)
 Snowball (*Viburnum opulus*.)
 Queen of the Prairie (*Spirea*.)
 Mock Orange (*Philadelphas*.)
 Wigelia Linensis
 High Bush Cranberry (*Viburnum edule*.)
 Buck Thorn (*Rhamnus catharticus*.)
 Crab Apple (*Pyrus coronaria*.)

It is certainly not because there is a scarcity of material that many of our farmers' homes look so desolate and uninviting, but it is a want of energy and a properly cultivated taste. The farmer above all others should plant trees, shrubs and flowers about his home. Let him once begin with a right spirit, and the labor of planting, arranging, &c., will become a pleasant recreation.

Perhaps we should not close this report without calling your attention to the insects that infest and destroy our trees. Their names are legion, and we should be prepared with every known remedy to repel their attacks. The only sure method of saving your seedling trees from the cut worm, is to hunt and kill by hand.

Larger trees are attacked by the borer (*Saperda*) who lay their eggs in June and July, which hatch in August and September, and means must be immediately devised to prevent their work of destruction. The best known remedy is that introduced by a learned chemical professor in the East:

"One-half bushel of lime and four pounds of powdered sulphur placed in a barrel with a cloth tied over the mouth; slake with hot water; reduce to the consistency of common whitewash, and on application add one-half ounce of carbolic acid to each gallon of liquid. Apply each spring and fall. Lime and sulphur slaked dry is said to destroy the currant and gooseberry worm.

APPLICATION FOR BORER.

Mr. Jordon. I would like to give my application for the borer. It consists of one part of lime, one part of soft soap, and one part of

fresh cow dung thoroughly mixed together and applied to the trunks and larger branches. I have used this two years and like it better than any other.

CENTENNIAL DIPLOMA AND MEDAL.

The Centennial diploma and medal having been received since the last meeting of the Society, and the former handsomely framed, Mr. Harris was called upon to make a formal presentation of them.

This he did with the following handsome speech, for which the thanks of the society were returned:

Mr. President and Brother Co-Workers in Fruit Culture:

It is with pleasure we meet you on this auspicious occasion. Many of us have been considered monomaniacs, fit subjects for the insane asylum, for pursuing our vocation with so much determination. In the future our motto must be, not to look back on losses sustained, but ever onward to the bright future of fruit culture in our State. At times it has seemed dark to those most enthusiastic, and to those weak-kneed brethren, "Oh, thou of little faith," *black as night*. But the day is dawning, already the tints of morning are discernible and we are assured of success in the near future. Skeptics and croakers, wipe well the dust from those old specs, that your eyes may not deceive you while looking at these small tributes we have the honor of presenting to the Minnesota Horticultural Society from the United States Centennial Board of Commissioners, a recognition of the products of your toils and privations. As delegates appointed to represent you at Philadelphia, it gives us great pleasure to show these tokens of your contribution and our work performed.

A motion was carried empowering the Secretary to procure obituary notices of deceased members.

ARTICLES ON EXHIBITION.

The report of the committee on Articles on Exhibition was then called for and read, after which it was accepted by vote of the society.

The report was as follows:

Your committee appointed upon the display of fruit would respectfully report that they have listed the rather limited display at hand, and tested the few seedlings offered, with the following result:

Contributed by E. B. Jordan, Rochester, a dozen specimens of Wealthy in excellent condition; Pickett's Seedling No. 5; Orange crab. He also exhibited the following sorts in glass jars: Early Strawberry, Orange, Gideon's No. 5, Gideon's No. 6, Pickett's No. 5, Conical, Meader's Russet, Hyslop, Transcendent, Hesper Blush, Aiken's Green Winter.

W. E. Brimhall, St. Paul: Alexander, Haas, Marengo, Hyslop, Meader's Winter, Soulard, Cions of Virginia Crab—6 ft. 4 in. in length and well ripened.

R. L. Cottrell, Dover, Olmsted county: Talman Sweet, Fameuse, Meader's Winter, and an unknown variety.

A. W. Sias, Rochester: Talman Sweet, Bethel, Fameuse, and an unnamed seedling of good quality; Wabasha—a seedling, season winter, of good size, pleasant sub-acid, the original tree twenty years old and claimed to be hardy and healthy; Minnesota Greening, a new variety of fair size and lively sub-acid flavor, in good condition at this time; tree only twelve years old; an unnamed seedling, Hyslop, Meader's Winter, Orange, Soulard.

T. M. Smith, St. Paul: two glasses of jelly—one of grape and another of grape and crab; a display of Rogers grapes, Nos. 4, 5 and 9, in good condition.

J. S. Harris, La Crescent: three varieties of sweet potatoes, Southern Queen, Brazilian, and St. Louis Red; the size of some of these specimens render them not unworthy of display where this vegetable has its natural home. Mr. Harris also displays a Transcendent shoot of last year's growth of the unusual length of 8 feet.

W. Elliot, Minneapolis: Cranberries, celery, pie plant, asparagus.

S. H. Kenney, Morristown: Early Amber syrup, and sugar drained by pressure from same cane.

C. F. Miller, Dundas: Sugar drained by centrifugal force and syrup from Early Amber Cane.

These specimens of sugar are as good as or better than the New Orleans variety, and commend it at once to public favor.

Twenty varieties of potatoes from the experimental gardens of the State University contributed by Prof. C. Y. Lacy.

In conclusion, your committee take advantage of their office to mildly rebuke the members of this society for the lack, we might say general, of interest displayed in getting together this our annual winter display. It is true that the last year's apple crop was light and where the grower had ten bushels two years ago, last year he had hardly one. But nevertheless if we had bethought ourselves to bring what we had and not left it to our fellows we would have made a display which would be wonderfully attractive, and be a practical assurance to the public, who look to our deliberations, that we are not a collection of fossils going over, year after year, the same old story of "The Lost Arts," but that we are alive and moving; that what we theorize and profess, that we practice and of that we can and do display the proofs.

Respectfully submitted,

A. W. LATHAM,
O. F. BRAND,
A. W. SIAS.

FINAL RESOLUTIONS.

The report of the Committee on Final Resolutions was then called for.

A motion was made that the report be adopted, spread on the records and copies furnished the Rochester papers. The motion was seconded. Mr. Elliot moved to amend so as to include the Olmsted County Agricultural Society by name. The amendment was carried then the resolutions were passed unanimously.

They were as follows :

Resolved, That while we recognize the great value of our annual meetings, and their decided yearly improvement in membership, and in the dissemination of horticultural knowledge, we earnestly request each member to use his influence to increase membership, attendance and interest, to the end that we may present the greatest good to the greatest number.

Resolved, That we, the members of this society, hereby tender our hearty acknowledgments to the citizens of Rochester, and the Olmsted County Horticultural Society, for the assistance they have extended to us in promoting the success of this our annual meeting, for their pleasant hall, their characteristic hospitality, and the endorsement they have given our efforts by their appearance at our gatherings.

Resolved, That we extend our thanks to the officers of this association for the interest they have taken and do take in its work, and especially to the president and secretary, who have borne the heat and burden of the day, have been at hand early and late, and by their unintermittent efforts aided greatly in making our labors in any degree a success.

Resolved, That we return our thanks to the Mil. & St. Paul and the Winona & St. Peter Ry's, for the reduced rate of fares allowed us on this occasion.

Respectfully submitted,

A. W. LATHAM,
U. S. HOLLISTER,
C. F. MILLER.

The society then adjourned.

APPENDIX.

APPENDIX A.

OBITUARIES.

DAVID ANTHONY.

DIED—At his residence, on Saturday evening last, February 3d, 1878, of apoplexy, DAVID ANTHONY.

On Saturday morning last the business portion of our town was astonished at the intelligence that the above deceased was stricken with apoplexy, and that his life was despaired of. And many were the anxious inquiries during the day, as to his condition, and a general feeling of sadness was expressed by all at the announcement of his death.

Mr. Anthony was born in South Adams, Mass., in 1833. His parents moved to Cayuga county, N. Y., while he was an infant. He received a common school education only. His first introduction into business, was in the shop of the B. & A. R. R. at Albany, as book-keeper. He removed to Illinois in 1854, and pre-empted 160 acres of land. In 1856 he returned to Massachusetts, and married his wife (the estimable lady who is now a widow) a daughter of D. A. Clary, an old and respected resident of Stockbridge. Together they returned to his farm, and together they worked to build up a home. For thirteen years they labored there, and he was successful in all his undertakings. He devoted much of his time to stock raising and selling in Chicago. During the latter part of his farming his attention was directed to buying and feeding. In 1869, being out of health, he sold his farm, and came to Minnesota, and, after looking over the state, settled in Kasson. He commenced business here as a broker, loaning money on personal property. In the summer of 1871, he bought the books of J. A. Babcock, who had been doing a small banking business, purchased a good safe, and opened a bank of deposit and discount, in the store formerly occupied by Seevents & Stevenson. In the fall he built a small office on the present site of the First National building. He continued his business in the small office until the 1st of August, 1874, when he organized the First National Bank, of which he owned over one-half the stock. He had previously made arrangements for the erection of the building, and would have used it as a private bank had not the First National been organized. He was made president, and labored incessantly for the institution, his choice from the first, and was so successful that at his death its stock was held at 132.

Mr. Anthony was always troubled with asthma, and was a great sufferer. On Friday, February 2d, he appeared in unusually good health, as many who met him on the streets can testify to. At the close of business he went to his home in excellent spirits; was a little wakeful in the night; awoke in the morning with a headache, which increased very rapidly after he got up, and soon developed into congestive apoplexy, from which he died in about fifteen hours.

In closing this biography we will say that the citizens of Kasson have lost one of its best supporters. Mr. Anthony identified himself with the interests of his adopted town; was ever ready to lend a helping hand to any enterprise that tended to the benefit of Kasson. Although not a member of any of the church organizations in Kasson, he always contributed liberally to each and all of them. He was born of Quaker parents, and inclined to that belief himself. His funeral took place from the house, on Wednesday afternoon, whence a very large concourse of people followed his remains to their last resting place. May each of our readers leave behind them the record of a life as fragrant with good deeds.

NOTE.—Mr. Anthony became a member of the Minnesota State Horticultural Society in 1875, and subsequently took great interest in its objects and proceedings.—SECRETARY.

M. W. LELAND

MARSHALL W. LELAND, an honored member of the Minnesota State Horticultural Society, died at his residence in Rochester, Minnesota, July 17, 1877. He was also at the time of his decease, a member of the Olmsted county Horticultural Society, of which he was president. He took a lively interest in horticulture, and grew a fine orchard on his farm within the city limits. He was one of the first and foremost in making experiments with hybrid varieties, which were grown by him successfully. His death by apoplexy was very sudden and unexpected.

Mr. Leland was born in Chester, Vt., June 30th, 1810, and was over 67 years of age at the time of his death. In 1833 he entered the Madison university, at Hamilton, N. Y., but left the institution while in the senior class. He afterwards entered Columbia college in the District of Columbia, graduating in 1838. He was soon after ordained a minister in the Baptist church, preaching in the Navy Yard church, and also taught a classical school. After a year and a half he went to east Virginia, where he labored as an evangelist, meeting with great success. In May, 1840, he married Miss Julia H. Anson, of Cuba, N. Y., a most estimable lady. Afterwards he was pastor of the churches in Hamburg, Pa., Post William, Ohio, and Door Village, Ind. In the latter place his lungs failed, when he went to Cuba, N. Y., and was engaged in mercantile pursuits for six years. He came to this city in 1861, and has resided here since. He purchased the place on which he resided here of Rodney Whitney, and built the "Leland block" on Broadway. His wife died in May, 1873, of the same disease that carried him off. He leaves five children.

WILLARD C. FLAGG.

[NOTE.—Mr. Flagg's death is a loss not alone to his own state, but to the agricultural and horticultural interests of the entire country. Therefore, although he was not a member of the Minnesota Horticultural Society, it is deemed appropriate to give a place to the following tribute from the pen of Hon. M. P. Wilder, which we find in the report of the American Pomological society.—SECRETARY.]

"Willard C. Flagg, Secretary of the American Pomological Society, is dead.

"Just as the closing pages of this volume were going to press, the sad duty devolves on me of announcing the decease of the beloved and esteemed Secretary of our Association. Mr. Flagg died at his farm near Moro, Illinois, on Saturday, March 30th, 1878. He was elected Secretary of our Society at the meeting in Boston, September, 1873, since which he has continued to discharge the duties of his office with great ability and fidelity. Few men of his age have held more offices of honor and trust. He was remarkable for his activity, enterprise and executive ability.

"It may be well said of Mr. Flagg that he has been a faithful public servant. Few have done more to aid in developing our natural resources, especially in the West. Nor were his official duties confined to this section; he was not only secretary of the American Pomological Society, but President of the National Agricultural congress. He was also President of the Illinois Farmers' Association; first United States Collector of Customs for the Alton district; a member of various scientific and agricultural associations, and one of the most lucid and facile writers on agricultural subjects in the country. He was also a trustee, at various times, of a number of state institutions, including the Illinois Industrial University; a Senator from his district to the State Legislature during the sessions of 1869-1871, and the special sessions of 1872.

"In fact, the sphere of his activity was so extended we cannot make a full record of them here. But he has left us a worthy example of what one may do for the advancement of the public welfare and the interests of the associations with which he is connected.

"At a time so many are seeking to perform their work, with little regard to its quality, Mr. Flagg's love of thoroughness in all that he did, was such as to impress itself upon all who knew him, as one of his most prominent characteristics, and his industry enabled him to accomplish a vast amount of work. But (in the words of his memorial in the *Prairie Farmer*, of which he was for many years the horticultural editor) above all he will be remembered by those who knew him intimately as a man of strict honor and integrity, who loved justice for the sake of justice, and whom no one could swerve from what he considered the path of duty.

MARSHALL P. WILDER,

President of the American Pomological Society."

Boston, April 8th, 1878.

[NOTE.—One or two other obituary notices should appear in this volume, but the secretary has not been able to obtain them even by repeated efforts.]

APPENDIX B.

MISCELLANEOUS PAPERS AND REPORTS.

NOTES ON THE HISTORY OF FRUIT CULTURE IN MINNESOTA.

BY JOHN S. HARRIS.

[From the Transactions of the American Pomological Society, Session of 1877.]

[NOTE.—Some of the facts stated in these notes have appeared repeatedly in the Transactions of the Society, but we think their republication in this form will be acceptable to many horticulturists, as well as interesting to future generations.—SECRETARY.]

From its earliest settlement, even down to the present time, an opinion has prevailed very extensively with our people, that Minnesota is not, and will never be, a fruit producing State. And in the early years of its settlement it was no easy matter to find men with nerve and hope enough to enable them to plant trees in opposition to the public sentiment, and in the face of the difficulty attendant upon the settlement of a new country. Nevertheless, a few men, strangers to each other, and in different parts of the State, have planted and replanted fruit trees for more than twenty-five years, and struggled to succeed with a tenacity and persistency that excited the mournful pity of their neighbors; but, as for the first fifteen years of that time we were without horticultural societies or any organized effort in that direction, most of the early history of their trials and triumphs is lost to the world, or can only be gathered up by months of painful research, which I am unable to give at this time.

The first attempts at fruit growing in Southern Minnesota were made by John Shaw, in Winona county, and Samuel McPhail, in Houston county. John Shaw first came to the State in 1851 and remained during the summer, and the next spring, 1852, made a permanent settlement in the Rolling Stone Valley. He brought with him from his eastern home, a nail keg full of apple seeds, which were planted by himself and a few neighbors. A portion of the trees have withstood the severity of our climate for a quarter of a century and borne several crops of fair fruit, and become the nucleus of flourishing orchards, a lasting monument to him whose forethought has brought about so much good, for he soon fell a victim to overwork and exposure. His name is a household

word in that neighborhood and the fruits of his deeds are a way mark of encouragement to the people who will come after. This one act of a benevolent, far-seeing man forever settled the question of apple growing in that neighborhood and as a result Winona county is now far in advance of any other county in the State in the quantity of apples raised. In the spring of 1853 Samuel McPhail, one of the first settlers of Houston county, planted a few apple trees and started a small nursery in the town of Caledonia; and although he was thought to be visionary the neighbors soon caught the same spirit and nearly every farmer planted his little orchard as soon as land could be cleared up and broken; but most of them were doomed to see their trees killed to the ground about every alternate winter, and they were then usually ready to join the company of *no faith*. A few persisted in replanting and caring for their trees, and were rewarded with a very encouraging degree of success. Among the most successful of these may be named: Wm. F. Dunbar, of Caledonia; J. and C. Kline, of Union; Capt. See, of Brownsville, and J. S. Haris, of La Crescent. Unfortunately the severity of the winter of 1872-3 nearly destroyed most of our trees, for they generally had been selected without any regard to hardiness. The pioneer in tree planting in the vicinity of St. Paul and Minneapolis was L. M. Ford. He started a nursery of seedlings and grafts at Groveland, in 1850, and also imported and sold large quantities of trees. These trees from Iowa, Illinois and New York, did very well until the winter of 1855, when he lost largely. But about fifteen out of one hundred varieties came through with any show of life, and about two years later the remaining fifteen killed out, root and branch. Nothing was left but a few Siberians and Transcendent crabs, which were now pronounced *iron clad*, and from this date they began to be eagerly sought for and brought *fever* prices; as a result many planters were imposed upon by dishonest tree agents, who palmed off worthless trees for them. The same year, 1850, C. H. Oates set some apple trees on Apostle Island, in Lake Superior, which survived the winters for many years and bore fruit.

About the year 1854, Peter M. Gideon, of Excelsior, Hennepin county, commenced planting trees quite extensively and met with heavy losses, but being a man of unyielding disposition, as he had determined to make a thorough test he continued his experiments and persevered under difficulties that would have totally disheartened the most resolute of men. His labors were finally crowned with success, and he now has fine orchards of the Oldenburg and seedlings of his own growing that are now fruiting, and has added to our list of hardy apples the *Wealthy*, a Minnesota seedling of great beauty and fair quality, which is creating a great sensation and bids fair to soon find a place in every orchard and garden. There were a few others in different parts of the State who planted trees between the years 1850 and 1859, but we have no record of them, neither are we able to learn that any fruit of the *Pyrus* family was raised in the State previous to 1860, except Siberian crab, and one single specimen of *Flemish Beauty* pear, and it is probable that not one apple tree out of twenty-five planted previous to this date had survived three winters.

At the State Fair, held at Fort Snelling in that year, premiums were awarded to Mr. P. M. Nichols, of St. Paul, for display of Siberian Crabs, and to H. F. Matterson for pears; also R. Knaupheide was awarded first premium for grapes, the varieties being the *Isabella* and *Catawba*; and according to the *Farmer and Gardener*, then published at St. Paul, Mr. Eli Robinson, of Ninninger, Dakota county, had a few apples on his trees. The same year, 1860, J. S. Harris raised a few *Bailey Sweet* apples of great size, and also *St. Lawrence*. The trees

belonging to Harris that produced the first apples are still living and in good health, and one of the trees has twice produced sixteen bushels per year. In the year 1861 several men in Houston, Winona and Wabasha counties raised a few apples, Mr. Huff and Dr. Ford, of Winona, had some fine Flemish Beauty pears. Reports of these successes began to circulate through the papers of the State, and tree planting began to receive considerable attention.

The first public display of apples was made by J. S. Harris, of Houston county, and E. Rollins, of Wabasha county, at the State Fair held in Rochester, Olmsted county, September 3d, 4th and 5th, 1866. The report of the fair, says Mr. Harris showed nineteen varieties, mostly grafted fruit, and some pears, the largest weighing seventeen ounces, and Mr. Rollins seven or eight varieties, mostly seedlings. This little display of fruit elicited much comment, and was the greatest attraction of Floral Hall; and thousands of people improved the opportunity to feast their eyes upon a sight which they had long yearned for, but never beheld since they left their eastern homes, and hundreds returned to their homes determined to raise their own apples; and from this fair we may date the first organized effort in fruit growing. At this date a Fruit Growers' Association was organized and has become the present State Horticultural Society, which usually holds two meetings a year, at which all kinds of fruit and the methods of cultivating them are discussed, and varieties recommended for trial and general cultivation; and although the winters of 1872-3 greatly injured the best orchards in the State, and destroyed nursery trees by the thousands, the interest is steadily on the increase, and orchards are being planted in all parts of the State.

The Duchess of Oldenburg and Tetofsky and Transcendent, and other crabs, are succeeding nearly everywhere, and the Red and White Astrachan, Alexander, Fameuse, Haas, Plumb's Cider, Walbridge, Wealthy, and Talman and Price's Sweet and Utter's Red are pretty sure to succeed in the counties bordering the Mississippi river, and we have a large list of supposed hybrid Siberians, many of them as large and fine as apples, that promise to be hardy in nearly every locality in the State. The interest in grape culture is growing rapidly, and nearly every effort in that direction has been crowned with success. Truman M. Smith and Rudolph Knapheide, of St. Paul, are successfully growing about forty varieties; and we have a number of vineyards of the Concord and Delaware, where they are grown extensively for market. If we continue to advance for the next ten years as we have for the past, we shall rank with many of the older States in growing apples, and be excelled by few in grapes and small fruits. At the State Fair in St. Paul, in 1876, there were on exhibition more than 120 varieties of apples, thirty of Siberians, and fifty of grapes, all of fine quality and good appearance.

REPORT OF JOHN HART ON FRUIT IN WINONA COUNTY.

WINONA, January —, 1878.

Prof. C. Y. Lacy, Secretary of State Horticultural Society:

DEAR SIR—In our section of the state we have experienced the most severe season on our fruit, and one of the best as far as the growth of apple and pear trees was concerned. The appearances were never better for a large crop of fruit, until the 29th of April we had about four inches of snow, and on the 30th the thermometer went down to 22°. The consequence was a severe frost for sev-

eral days. On the 7th of May it was quite warm, and on the 8th of May we had frost again. These sudden and extreme changes had the effect of killing all the fruit buds in this neighborhood. Some of our own were in blossom at the time, our location being so warm. Even our strawberries and raspberries were all destroyed as far as the fruit was concerned. Notwithstanding all this we are not in the least discouraged, as our trees and plants have a good growth and everything looks well for a good crop of fruit the coming season.

These sudden changes have occurred in all northern countries, yet the people were not discouraged; they tried again and success in most cases has followed their efforts.

We would say a word to those who intend to plant fruit trees the coming spring. When there are only a few to be planted, plant the Duchess of Oldenburg, Hyslop, and Transcendent. The latter was the only tree that gave us a full crop last season. We would not advise the planting of pear trees unless in favorable localities. Of twenty varieties tried by us, all are dead except the Flemish Beauty and a Minnesota Seedling.

Of raspberries the Philadelphia is good.

Strawberries.

The Wilson is undoubtedly one of the best. We have a seedling of our own which we have been testing for a few years past, and think it is a good berry. Will say in our own locality it will exceed the Wilson. The berries are larger, the quality better. Planted on the same piece of land the plants will bear longer and stand the winter better.

After twenty years' experience in trying to raise fruit for market in Minnesota, we are satisfied that we have two obstacles to overcome: the extreme heat and cold of our springs, and the multitude of insects which injure our fruit trees in summer and fall. Close observation has led us to believe that they attack every variety of fruit trees, and to fear that if something is not done to protect our small friends, the birds, we will have to despair of growing fruit in Minnesota.

Respectfully yours,

JOHN HART.

APPENDIX C.

REPORTS OF LOCAL AND COUNTY SOCIETIES.

OLMSTED COUNTY.

MEETING OF MARCH 2D, 1878.

The fifth annual meeting of the Olmsted county Horticultural Society was held at the office of the *Record and Union* on Saturday afternoon, March 2d, 1878.

The Ten Commandments of Pomology.

The meeting was called to order by the president, A. W. Sias, who proceeded to read the "Ten Commandments of Pomology." He said they were translated from the Prussian by a correspondent of the *Horticulturist*, and written by a Bohemian clergyman. They are as follows:

- 1st. Thou shalt base thy faith only and exclusively on a vigorous seedling carefully raised; nor shalt thou suffer beside it either in thy orchard or nursery, any sucker, or make use of a sucker for propagation.
- 2d. Thou shalt not call any kind of fruit tree by a wrong name.
- 3d. Thou shalt keep a watchful eye on thy fruit trees during the time of their holidays (winter).
- 4th. Thou shalt honor the parents of thy fruit trees (the wild sorts) on account of their seeds, in order to raise from them long lived, vigorous trees, for the benefit of the culture of fruit trees.
- 5th. Thou shalt protect thy fruit trees from injury.
- 6th. Thou shalt not propagate thy fruit trees in any unnatural way.
- 7th. Thou shalt not impoverish where fruit trees grow, by constantly taking from them without ever giving.
- 8th. Thou shalt not bear false witness against the culture of fruit trees.
- 9th. Thou shalt not be immoderate nor incautious in thy desire for new kinds and varieties of fruit trees.
- 10th. Thou shalt not always covet nurseries in the distance to select thy fruit trees from.

Mr. Sias proceeded to read an extract from an interesting speech delivered by Mr. S. T. Jones of Kasson, at St. Charles, January 24th, 1878. He recommended the cultivation of small fruit. He who beautifies his home by setting trees and hedges, by cultivating gardens and orchards, was God's honored steward and

man's benefactor. The women should cultivate flowers, and the men should plant trees to beautify the home and render it attractive. This would greatly enhance the value of the farm, and tend to promote the healthfulness of the climate. The president closed his remarks by expressing a hope that the time might hasten when fruit trees may be planted on every man's farm throughout this fair land.

Some discussion arose with regard to adopting the commandments as read.

Mr. M. W. Cook said he thought every one ought to plant trees on his own land. It is not the good of the nurseryman that should be considered, but the general good of the community.

Mr. E. B. Jordon said if people did not take care of their trees it was not the fault of the nurserymen.

Mr. G. W. Mason thought the planting of fruit and shade trees was a benefit to the man who planted them, and also his neighbors, but he did not think it profitable to plant seedlings. He said a man who had about three thousand seedlings now had only two or three trees left.

Mr. Cook said a seedling was worthless until tested.

Mr. M. Pearce thought a seedling might be vigorous and not hardy.

Mr. Sias thought it was better to use seeds of wild varieties, than those now used, and said seedlings were more successful where they were originated, than elsewhere.

Mr. Jordon replied that there was no grounds for that, and said a tree was no better because it was grown in Minnesota; a tree grown in Missouri might do equally well. He had never raised a seedling as well adapted to the soil and climate of Southern Minnesota as the Duchess. It was just as much at home as in Russia.

Mr. Sias asked if it was as long lived as the Wealthy.

Mr. Cook said no man could answer a question he had not seen fully demonstrated.

Mr. Pearce was decidedly in favor of raising fruit from seed planted in Minnesota.

Mr. Sias said our seedlings would no doubt produce longer lived trees than foreign trees.

Mr. Pearce contended that any variety of fruit could be taken, and by successively propagating from the seed it would become acclimated the same as corn, and become hardy.

Mr. Hillman inquired if that was true, why we could not raise the peach and orange as well in Minnesota as in Florida.

Mr. Pearce. We can, and are going to do it.

Mr. M. J. Hoag said that he had more hopes of producing hardy trees from those grown here, than anywhere else; every climate had a pomology of its own.

Election of Officers.

On motion the question of the adoption of the commandments was laid on the table, and the society proceeded to the annual election of officers. They are as follows:

President—A. W. Sias.

Vice President—G. W. Mason.

Treasurer—M. J. Hoag.

Secretary—S. D. Hillman.

Ass't Secretary—M. Pearce.

Apples Recommended.

On motion the list of apples recommended at the late meeting of the state society, was adopted as follows:

Duchess, Wealthy, Tetofsky, Haas, Plumb's Cider, Price's Sweet, Saxton, St. Lawrence, Utter's Red, Fameuse, Talman Sweet, White Astrachan, Elgin Beauty, Malinda, Stewart Sweet, Walbridge, Peach.

Mr. Jordon said he had examined the fruit trees very closely, and he found his tenderest varieties were entirely uninjured, and the indications were favorable from present prospects for a larger crop of fruit than Minnesota had ever produced. He was expecting hundreds of bushels from his orchard. He should plant ten acres more to his orchard this spring in addition to his orchard of fifty acres.

A discussion arose as to the varieties to plant for an orchard of 100 trees. Mr. Pearce said in good fruit soil, he would set about fifty Duchess and the same number of the Wealthy; on some soils he would plant nothing but the hybrids.

Mr. Jordan thought fifty Duchess too many. He favored the crab varieties. A few years ago he would not plant any standard trees.

Mr. Cook said he would recommend the planting of Early Strawberry, Orange, Duchess and Wealthy.

Grapes.

Considerable discussion was had on the culture of grapes.

Mr. Jordon favored planting in rows from east to west, and Mr. Cook in rows twelve feet apart, north and south. He said Mrs. J. B. Clark, in East Rochester, had succeeded well in raising the Lady grape. He favored the Janesville grape, because it was early, hardy and productive.

After some further remarks the society adjourned to meet in the month of June, next, at the residence of M. W. Cook, at which time it is expected that strawberries will be ripe, and the merits of Mr. Cook's numerous varieties will be duly discussed.

MEETING OF JUNE 24, 1878.

Strawberries.

Pursuant to invitation a number of the members of the County Horticultural Society, and others, met at M. W. Cook's residence, Monday afternoon, to discuss the subject of strawberry culture, and visit Mr. Cook's plantation. The afternoon was extremely warm, but that did not prevent the gentlemen from taking a walk about the place, examining the beds, different varieties, etc., and sampling them rather extensively. Mr. Cook has some eight acres in the delicious berry, and the extent of the yield is simply wonderful. There were fifteen persons engaged in picking the fruit, and that day he sent eighteen or twenty bushels to market. He has several varieties, the Wilson, Col. Cheney, Boyden's No. 30, Kentucky, and others late and early, and the field gave ample evidence of careful and intelligent culture.

After viewing the grounds the party returned to the house, where they were served with berries and cream. As soon as the repast was concluded, Mr. Sias, president of the society, called the meeting to order, and stated that Mr. Cook

and himself had been appointed a committee to go to Winona and examine Mr. Hart's new berry, the Hart Seedling. Mr. Hart is the originator of this berry. It is very large, one berry measuring nine inches in circumference. The flesh is moderately firm, form slightly conical, regular, color crimson scarlet. The fruit stalks are long and stout, leaves large and numerous. It is a hermaphrodite variety, and the blossoms are large and perfect, and the flavor delicious. Mr. Sias closed with a high compliment to Mr. Hart's personal integrity.

Samples of the berry were shown, they being very large and well formed.

Mr. Pearce moved that the report be accepted. Adopted.

Mr. Cook thought the Hart Seedling the nearest perfection of any berry he had ever seen. He could not judge of the bearing qualities, as the frost of last spring had injured the plants very much. It is perfect in form, color and quality, and is a large grower.

Mr. Pearce said a berry must be good which no one condemned. All the leading horticulturists had tried it, and had no criticisms to make concerning it.

Mr. Bamber said that at the State Horticultural meeting, these berries were on exhibition, and were pronounced perfect by all who tried them.

Mr. Sias stated that he was shown a seedling pear tree on a farm owned by a neighbor of Mr. Hart's, which was the largest and finest he had seen in the state. It was well loaded with fruit, and took the first premium at the state fair. Those who want to cultivate this fruit, should procure scions.

A vote of thanks was tendered Mr. and Mrs. Cook for their hospitality, and the meeting adjourned.

Mr. Pearce showed a beautiful bouquet of verbenas and pansies, and Mr. Cook a number of stalks of strawberries, with from nine to fifteen berries on a stalk.

APPENDIX D.

NOTES FROM CORRESPONDENCE.

CORRECTION TO LIST OF CENTENNIAL CONTRIBUTIONS.

ST. PAUL, Minn., Jan. 15, 1878.

Mr. C. Y. Lacy:

DEAR SIR—I would most respectfully call attention to the report of Wyman Elliot, on Contributions to the Centennial.

I learn that Truman M. Smith, Esq., was not properly credited with the varieties which he furnished, namely, some very large choice Duchess, and goodly number of them. Also some very choice Hyslops. I think it due our worthy horticulturist and President of this Society, that a correction be made in our proceedings.

I remain as ever a well wisher,

W. E. BRIMHALL.

FROM PROF. WM. F. PHELPS.

[NOTE.—This letter intended for the annual meeting, was received too late for that occasion. It is therefore inserted here.—SECRETARY.]

WHITEWATER, Wis., January 14, 1878.

Prof. C. Y. Lacy, Secretary Minnesota Horticultural Society, Rochester, Minn.:

DEAR SIR—Your kind invitation to the meeting of the Minnesota State Horticultural Society, to be held at Rochester on the 15th, 16th and 17th, is received. I regret that the meeting occurs during the closing days of the term, while we are in the midst of our examinations, thus rendering it impossible for me to be present. Allow me to assure you, and through you, the society, of my continued interest in its important work. Nothing but my pressing duties here would prevent my attendance at the meeting and participation in its proceedings. I trust and believe that you will have an interesting and profitable session.

Very truly yours,

WM. F. PHELPS.

FROM A. J. PHILLIPS.

WEST SALEM, LA CROSSE COUNTY, Wis., January 5th, 1878.

Prof. C. Y. Lacy, Minneapolis, Minn.

DEAR SIR—I have an earnest desire for the prosperity of your society and for the success of the horticultural enterprise in both northwest Wisconsin and in Minnesota. I enclose to you one dollar to pay my membership fees for another year, as I shall be anxious to see your report, even if I am not permitted to be present at your meeting. I perused it with interest last year.

I fully agree with Messrs. Jewell, Grimes and Arnold, in the discussion on Mr. Pearce's paper on Fall Planting and Root Killing. I have learned by experience, at different times, with different varieties and under different circumstances, that fall planting is not safe nor desirable, and should not be recommended to planters by nurserymen. Another thing nurserymen should be careful to do; to be very particular, in selling trees, to inquire about the soil and location of the man's farm, and, if possible, to recommend the best place for setting the trees; not to lose interest in him as soon as his trees are delivered and paid for; for success of the coming nurseryman depends on the work done by the present men in that business.

I have been fearful that the warm weather here in December, with the thermometer up to 60°, would start the trees, and prove very injurious; but as yet I have neither seen nor heard of any damage in this respect in this vicinity. Still, I do not like the ground freezing up without snow, as it has done this time; and in order to correct this I have a man mulching all the while now.

In my orchard of 2500 trees I have one hundred Wealthy, that are doing finely. I am a little inclined to have Wealthy "on the brain," for I do think it the most valuable as a hardy tree of any in the Northwest, except, perhaps, the Duchess, and I am now at a loss which to give the preference as to hardiness. Orange Crab, Minnesota, Peach Crab and Whitney's No. 20, are all growing fine, and seem to be perfectly hardy. Utter's Red, Fameuse, Duchess, Red Astrachan, Tetofsky, Price's Sweet and Haas, are my main varieties; but, with others, have to report but little fruit last season.

I will close by giving you one of the many incidents of fruit-growing in the Northwest. On a pleasant day in the last of October, while hunting on the bank of Dead Coon lake, near the western extremity of Minnesota, I came up to a man who was busily engaged digging a hole in the ground. Said hole was about eight feet long, three feet deep and three feet wide. My curiosity was aroused; for I thought if any one was to be buried there it must be a Minnesota giant. I accosted him, and from his dialect I found him to be a German. I said, "What are you going to bury?" "Oh," he said, "Some apple trees." He said he drove his oxen all night from Marshall, to get them home and buried as soon as possible. He invited me to go to the house and see them, for I think he had already discovered that his allusion to apple trees had touched me in a tender spot. I looked them over; fifty in number; cost \$15; bought, I think, of an Owatonna nurseryman. On examination I found some Duchess and Transcendents that might in his location, grow and bear fruit. I found him to be a bachelor, with no companion but his dog; and on looking over his land, which was rich prairie, where the winds seemed to have but little to break their fury for hundreds of miles; and hearing him ask the question, if I thought those trees

would bear any apples next year, I felt like saying—(although I did as fruit-growers and nurserymen often do, kept part back)—“My dear sir; with your limited knowledge of the trees you have bought; your lack of the same in after culture; your location on this rich, bleak prairie; the varieties you have purchased, my advice would be, dig your hole a little deeper; prepare a board bearing the inscription, here lies personal property which cost \$15; time spent talking with agent, \$1; time bringing home same, \$4; burying and incidentals, \$3. Total, \$23. Then put the trees in, cover them up, put up the board at one end of the hole, to mark the spot, and then take pains that they never were uncovered, but hold the spot sacred; and should any of the future generation of tree pedlars call that way you could effectually dismiss him without losing much time, by calling his attention to that epitaph.” But I did not say it, although I sincerely thought it the cheapest way of disposing of his trees. But as the poor man had no wife, I thought perhaps that it would be as well to set the trees, ~~then~~ he would have *something* to annoy him and take his time when not otherwise employed. So after giving the best directions I could as to burying, resurrecting and planting his trees, I left him dreaming of a bountiful crop of apples in two or three years.

Wishing you a pleasant and profitable meeting, I am yours truly,

A. J. PHILLIPS.

APPENDIX E.

ARTICLES OF INCORPORATION AND BY-LAWS.

ARTICLES OF INCORPORATION OF THE MINNESOTA STATE HORTICULTURAL SOCIETY.

Know all men by these presents, that we, the undersigned, John S. Harris, of La Crescent, Houston county; John H. Stevens, of Hennepin county; Wyman Elliot, Charles Hoag, J. T. Grimes, A. Stewart, R. J. Mendenhall, Peter M. Gideon and Charles H. Clark, all of Hennepin county; D. A. J. Baker, Truman M. Smith, D. A. Robertson, William E. Brimhall, H. J. Brainard, L. M. Ford and Wm. Paist, all of Ramsey county, and Thomas Ramsden, of Washington county; O. F. Brand, A. W. McKinstry and Levi Nutting, all of Rice county, and P. A. Jewell, of Wabasha; E. H. S. Dart, of Owatonna, Steele county; all of the State of Minnesota, do hereby associate ourselves together for the purpose of becoming incorporated under the name and for the purposes hereinafter stated, pursuant to the provisions of title and chapter 34 of the General Statutes of said State of Minnesota, so far as the same may be applicable; and do now adopt the following articles:

ARTICLE 1. This corporation shall be known as the Minnesota State Horticultural Society.

ARTICLE 2. The object of this society shall be to collect, condense and collate information relative to all varieties of fruits, flowers, and other horticultural productions, and dispense the same among the people.

ARTICLE 3. Any person interested may become a member of the society by paying to the Treasurer or Secretary the annual fee of one dollar, and signing the constitution and by-laws.

ARTICLE 4. The amount of capital stock of this corporation shall be twenty-five thousand dollars (\$25,000), with privilege to increase it to \$100,000, to be held in shares of twenty-five dollars each.

ARTICLE 5. The officers of this society shall be as follows: President, one Vice President to reside in each congressional district of this state, Secretary,

Treasurer, and an executive committee of three or more members, all of whom shall be elected by ballot at the annual meetings of this society, which shall be held on the 3d Tuesday in January.

ARTICLE 6. The principal place of business shall be wherever the majority of the society may hereafter designate.

BY-LAWS.

DUTIES OF OFFICERS.

1. It shall be the duty of the President to preside at all meetings of the society, when present, and to deliver an address at the annual meeting of the same. In the absence of the President, one of the Vice Presidents shall preside in his place.

2. The Secretary shall record all the doings of the society, collate and prepare all communications, etc., for the public press, and pay over all money received from members or otherwise, to the Treasurer, on his receipt; shall receive and answer all communications addressed to the society; establish and maintain correspondence with all local, county, district, and state horticultural societies, and secure, by exchange, their Transactions, as far as possible; to aid the President, as an executive officer, in the dispatch of business relating to meetings of the society, and notices of horticultural and similar meetings of general interest, and report to the annual meeting of the society an abstract of the matter that has come into his possession, which shall become part of the Transactions for the current year, and shall be prepared by him for the public printer.

3. The Treasurer shall collect and hold all funds of the society, and pay out the same only on the order of the Secretary countersigned by the President.

4. An executive committee of five shall be chosen annually, who shall, in connection with the President and Secretary (who shall be members *ex officio*) have in charge all matters pertaining to the interests of the society; shall revise all matter coming into the hands of the Secretary, and pass upon the same their approval before its submission to the annual meeting.

5. The executive committee may call a meeting of the society at any time and place they may deem advisable for the interests of the society, giving at least thirty days' notice through the public press, and shall in no case incur any expense exceeding fifty dollars, except by authority of the vote of the society at its annual meeting, when the specific object and the amount so appropriated shall be designated.

6. The President, at each annual meeting of the society, or as soon thereafter as practicable, shall appoint a general fruit committee, consisting of one member from each senatorial district in the state; and it shall be the duty of each member to report upon the fruit crop in his respective district annually, also a limited list of fruits best adapted to general cultivation in the district which such member represents.

7. That committees on vegetables and market gardens; flowers and floriculture; trees for the forest and forest culture, and entomology, be appointed each year, whose duties it shall be to report on their several topics to this society at the annual meeting.

8. The society may at any regular annual meeting elect as honorary members, any person or persons who may have performed valuable services for the society, or upon whom the society may wish to confer special honor. Such memberships shall be for five years from date of such election, and shall be entitled to all the privileges of the society except voting.

9. The wives of members shall be members of the society without the payment of a membership fee.

10. Final article. These by-laws may be amended by a two-thirds vote of the society at any regular annual meeting.

NOTE.—Before the adjournment of the meeting at Rochester, it was voted, upon invitation of members from that place, to hold the next annual winter meeting at Minneapolis. In transcribing the secretary's notes, this action of the society was accidentally omitted.

The appointment of A. J. Phillips as delegate to the meeting of the Wisconsin State Horticultural Society by vote, was also omitted from its proper place in the Proceedings.—SECRETARY.

